



Northeast Fisheries Science Center Reference Document 21-07

# Serious Injury and Mortality Determinations for Baleen Whale Stocks along the Gulf of Mexico, United States East Coast, and Atlantic Canadian Provinces, 2014-2018

March 2021



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## ABSTRACT

Opportunistic reports were used to calculate rates of human-caused serious injury and mortality to baleen whale stocks along the Gulf of Mexico, United States east coast, and Atlantic Canadian provinces from 2014 through 2018. All available information for reported whale injury and mortality events was evaluated by using established criteria to assign injury severity and cause of injury or death for each event. The average annual rate of detected human-caused serious injury and mortality during the period was 8.15 for North Atlantic right whales (*Eubalaena glacialis*), 15.25 for Gulf of Maine humpback whales (*Megaptera novaeangliae*), 2.35 for western North Atlantic fin whales (*Balaenoptera physalus*), 10.15 for Canadian east coast minke whales (*B. acutorostrata*), 1.2 for Nova Scotian sei whales (*B. borealis*), and 0 for western North Atlantic blue whales (*B. musculus*) and northern Gulf of Mexico Bryde's whales (*B. edeni*). The number of serious injuries and mortalities not reported is unknown, and actual levels may be much higher.

## INTRODUCTION

The Marine Mammal Protection Act (MMPA) requires the National Marine Fisheries Service (NMFS) to estimate annual levels of human-caused serious injury and mortality to marine mammal stocks (section 117) and to categorize commercial fisheries based on their frequency of incidental serious injury and mortality of marine mammals (section 118). Criteria for serious injury (SI) determinations were addressed at NMFS-convened workshops in 1997 and 2007 (Angliss and DeMaster 1998; Andersen et al. 2008), and in January 2012 the agency published national guidelines for distinguishing serious from non-serious injuries (NSI) of marine mammals<sup>1</sup>. There are currently no national guidelines for determining cause of death, but Northeast Fisheries Science Center (NEFSC) staff have used a set of criteria to evaluate reports of human-caused mortality to baleen whales since 2005 (Cole et al. 2005; Henry et al. 2014). This report presents the results of applying the national SI criteria and the NEFSC mortality criteria to all reported baleen whale events from along the Gulf of Mexico, United States east coast, and Atlantic Canadian provinces from 2014 through 2018. Affected stocks include the North Atlantic right whale (*Eubalaena glacialis*), Gulf of Maine humpback whale (*Megaptera novaeangliae*), western North Atlantic fin whale (*Balaenoptera physalus*), Canadian East Coast minke whale (*B. acutorostrata*), Nova Scotian sei whale (*B. borealis*), western North Atlantic blue whale (*B. musculus*), and the northern Gulf of Mexico Bryde's whale (*B. edeni*).

## METHODS

Opportunistic reports of baleen whale injuries and mortalities were provided by members of the US and Canadian regional stranding networks, whale survey and disentanglement teams, the US and Canadian Coast Guards, and the general public. With the exception of minke whales, the incidental takes of baleen whales recorded by fisheries observer programs are also included here as opportunistic reports because the numbers of takes witnessed by fisheries observers were not sufficient to calculate bycatch rate estimates. Minke whale bycatch rates were estimated from

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<sup>1</sup> See "Guidelines for Distinguishing Serious from Non-Serious Injury of Marine Mammals Pursuant to the Marine Mammal Protection Act" (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-policies-guidance-and-regulations#distinguishing-serious-from-non-serious-injury-of-marine-mammals>)

fisheries observer program data and are reported separately in stock assessment reports. Reports from Newfoundland and Labrador involving confirmed transboundary stocks (i.e., stocks that enter US waters during part of the year) were also included. However, humpback whale reports from these regions were not included in tallies because the Newfoundland and Labrador humpback feeding stocks are distinct from the Gulf of Maine stock inhabiting US waters (Palsbøll et al. 2001).

Reports of significant entanglement injuries known to have occurred within a year, based on individual sighting history or raw appearance of wounds, were included even if no gear was present. Whales temporarily entrapped by encircling fishing gear such as weirs and seines are also listed in this report even if there was no gear attached to the whale. Observations of small entanglement scars, however, were not included but are instead accounted for by population monitoring studies (e.g., Knowlton et al. 2012; Robbins 2010).

All available information for each reported injury or mortality was collected by the NMFS Greater Atlantic Regional Fisheries Office (GARFO), Southeast Regional Office (SERO), and the NEFSC. Confirmed reports were designated “events,” and for each event the species involved was verified, duplicate records identified, and relevant information from each source consolidated into a single record. Information from additional sightings of a previously documented event was added to the existing record. If an identified whale was involved in a second interaction, a new event record was created. Demographic and subsequent sighting information for injured whales was obtained from population monitoring studies, where available.

NEFSC staff reviewed each injury or mortality event and assigned the appropriate criteria from Tables 1 and 2 using all available information. Serious injury and mortality values, determined by which criteria were met, were either 0 (NSI), 1 (SI or mortality), or prorated (PR). For injury events to which several Table 1 categories applied, the injury category with the highest level of severity (highest SI value) was assigned. Criteria L10 through L12 accommodated events that lacked details necessary for assignment to a more specific category. Any injury leading to a significant health decline (e.g., skin discoloration, lesions near the nares, fat loss, increased cyamid loads) was classified as a serious injury, and the SI value for the case was set to 1.

More detailed injury information on or extended observation of an individual case/whale often justified a determination differing from the guidance of Table 1. A determination differed from the guidance defaults if an injury which the guidance identifies as NSI results in a visible health decline (and therefore SI). Conversely, SI determinations may be changed to a less severe injury or NSI if a whale is disentangled, sheds all entangling gear, or is resighted with healed wounds or a healthy appearance sometime after the injury.

If a whale was rescued from entangling gear and there was documentation that all gear was removed, the SI value was set to 0. If the entanglement configuration prior to disentanglement would have warranted an SI value greater than 0, the event was still identified for the List of Fisheries (LOF) assessment of US commercial fisheries’ incidental mortality and serious injury of marine mammals. The subsequent LOF classification of US commercial fisheries for regulation is beyond the scope of this report<sup>2</sup>.

Injury or mortality events were assigned to either US or Canadian waters if circumstances indicated on which side of the Hague Line the event likely took place. Such circumstances included identification of entangling gear by specialists, entanglements that anchored a whale, a chronology of sightings indicating an individual was well within a country’s waters around the time of the event, or witnessed vessel strikes. Because vessel collision mortalities are more likely to be

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<sup>2</sup> See NOAA Fisheries Office of Protected Species List of Fisheries (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries>)

instantaneous (Kraus 1990; Moore et al. 2004), country was assigned according to the location of the carcass. If there was a reasonable chance that the event may have occurred in either country's waters or elsewhere, the country assignment was listed as unknown. Events in this category were typically injuries or mortalities first detected near the US/Canadian border, injuries whose healing or deterioration indicated that the event occurred a substantial time before the first detection and therefore the whale may have traveled across a border since the injury was sustained, or mortalities involving severely decomposed carcasses that potentially drifted across jurisdictions.

The NEFSC determinations were reviewed by experts from other regional science centers and differences were reconciled. The determinations were also provided to the regional Scientific Review Group (SRG) for review prior to final reporting of determinations. Final determinations and the associated SI and mortality values were assigned to the date of the first detection of the injury or mortality.

## RESULTS AND DISCUSSION

Table 3 summarizes the total number of reported injury events and the number of events assigned a SI value. Table 4 summarizes the total number of reported mortality events for the baleen whale stocks along the Gulf of Mexico, United States east coast, and Atlantic Canadian provinces from 2014 through 2018. The average annual human-interaction values by stock presented in Table 5 are a combination of confirmed human-caused SI, a prorating of poorly documented injury events based on observed ratios of mortality to survival by injury type, and confirmed human-caused mortalities. The values are presented by stock, country of origin, and type of human interaction.

Appendix A provides details for each injury event listed chronologically by stock with location, individual identification (if known), assessment of whether the injury occurred in US or Canadian waters, description of injury, and the assigned SI category and value. For events where the final SI value conflicts with the value guidance provided by the national SI procedural directive, the SI value change provides the rationale for the discrepancy. The header row for each stock in Appendix A includes the stock's total number of reported injury events over the 5-year period, the total of the resulting SI values for the stock, and the number of events whose SI values were changed from those prescribed by the national guidelines. Appendix B provides details by stock of each confirmed human interaction event that resulted in mortality. Both appendices indicate which records should be considered for the LOF, should the fishery be identified.

Most entanglement events could not be assigned to a fishery or country of origin because of the inability to identify the entangling gear or a lack of circumstantial evidence for country identification. Gear type (not necessarily fishery) was identified in 142 of 289 entanglement cases, 38 of which were monofilament line or hooks. Two animals were entangled in unidentified debris and 2 in boat anchoring systems. Of the 150 entanglements for which the country of origin could be assigned with confidence, 94 were identified as from the United States and 54 from Canada. Included in these entanglement totals are 6 reported entrapments in Canadian weirs and 4 entrapments in US seines. Of the 74 vessel strikes, 56 either occurred or likely occurred in US waters, and 7 occurred in Canadian waters. For specific fishery information involved in baleen whale entanglements, see GARFO'S Atlantic Large Whale Take Reduction Plan Entanglement Reports<sup>3</sup>.

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<sup>3</sup> Atlantic Large Whale Take Reduction Plan Entanglement Reports (<https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/atlantic-large-whale-take-reduction-plan>)

The national SI criteria and the NEFSC mortality criteria attempt to encompass all event scenarios and provide guidance for assessing the severity of whale injuries and assigning mortalities to natural or human causes appropriately based on the information available. Although the results of this analysis may improve our understanding of the potential magnitude of human impacts to whale stocks, we examined only reported events and do not provide an estimate of the actual level of anthropogenic serious injury and mortality. The number of serious injuries and mortalities not reported is unknown, and actual levels may be much higher (Kraus et al. 2005; Williams et al. 2011; Wells et al. 2015).

## **Species Accounts**

### **North Atlantic right whale**

The average annual human-caused serious injury and mortality value for right whales from 2014-2018 increased 19% from the value for the 2013-2017 period (8.15 from 6.85). There were 66 confirmed injury events and 31 mortalities observed from 2014-2018. Twenty-six of the injury events were determined to be SI. Entanglements accounted for 25 of the SIs and 11 of the mortalities, while vessel strikes accounted for 1 of the SIs and 6 of the mortalities. Of the remaining mortality events, 14 were from undetermined causes: 3 carcasses could not be examined, 6 were partially examined, and 5 were too decomposed.

Thirty-eight of the 66 injury events were determined to be NSI. Twenty-five of these events were assigned to the L2 or L10 injury categories because of evidence of constricting or extensive entanglement, but the whales were seen again gear free and healing from the injuries. In 5 events, the whale was disentangled from constricting gear. There was 1 case of a right whale being released from a herring weir in Canadian waters, which we categorized as L10 but gave an SI value of 0. One event was categorized as L5a (a deep gouge potentially affecting bones or arteries), but the whale was seen again in good condition, and the wound appeared to be healing, so the SI value was set to 0. Conversely, 6 entanglement events assigned to NSI or prorated injury categories were ultimately given an SI value of 1 because of significant health decline.

An Unusual Mortality Event (UME) was declared for right whales beginning in June 2017 because of documentation of elevated mortalities<sup>4</sup>. Seventeen confirmed carcasses were detected in 2017 (12 in Canada; 5 in the United States), and 3 were detected in US waters in 2018. In 2020, serious injury events were added to the UME tallies. Two serious injuries were detected in 2017 (1 in Canada; 1 in the United States) and 5 in 2018 (2 in Canada; 3 in the United States). Serious Injury event details are included in Appendix A. Details on cause of death (where determined) is included in Appendix B. The right whale UME remains active at time of publication of this report, and details on additional events will be included in future reports.

### **Humpback whale**

The average annual rate of humpback whale serious injury and mortality increased 26% from the 2013-2017 period (15.25 from 12.15). From 2014-2018, there were 142 confirmed injury events and 117 mortality events. Fifty-one of the injury events were determined to be SI. Forty-five of the SI events and 11 of the mortalities were caused by entanglement. Six SI events and 24 mortality events were attributed to vessel strikes. Another 9 mortality events were from natural

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<sup>4</sup> <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2020-north-atlantic-right-whale-unusual-mortality-event>

causes. The remaining 73 mortalities had undetermined cause of death: 44 carcasses were not examined, 14 had partial examinations, and 15 were too decomposed. One animal was involved in a vessel strike and an entanglement event. This animal was previously reported as not seriously injured since the lacerations appeared superficial (L5b) and there was indication it was gear free. Upon further review, it was determined that the lacerations are of undetermined depth (L11), and the animal still carried an unknown entanglement configuration (L10). It is tallied as 2 separate injury events in Table 3, but as both criteria result in proration, the greater prorated value (L10) is utilized in calculating the entanglement serious injury rate in Table 5. Sixty-nine of the 142 injury events were determined to be NSI as a result of post-injury sighting information and/or human intervention. Thirty-four of these were type L2 or L10 injuries whose SI values were adjusted to 0 when the whales were resighted healing and free of gear. Another 21 SI values were reduced because disentanglement teams improved the whale's prognosis by removing some or all entangling gear. There was 1 event where an animal was released from a weir and 1 released from a seine. The SI values for 1 deep chop wound event (L5a) and 2 strikes by a small vessel traveling at greater than 10 knots (L6b) were also reduced to 0 because healing of the injuries was apparent. Conversely, 7 whales showed signs of health decline, and the SI value for each of these events was increased to 1. Two of these events were categorized as L10, and 5 were L3 (loose wrap or draped gear).

An Unusual Mortality Event was declared for humpback whales beginning in January 2016 because of documentation of elevated mortalities<sup>5</sup>. Twenty-six confirmed carcasses were detected in 2016, 34 in 2017, and 25 in 2018. Details on cause of death (where determined) is included in Appendix B. The humpback UME remains active at time of publication of this report, and details on additional events will be included in future reports.

## **Fin whale**

The average annual fin whale SI and mortality did not change from the previous period's value (2.35). There were 11 confirmed injury and 33 confirmed mortality events. Six injury events were determined to be SI, and all were attributed to entanglement. Three mortalities were caused by entanglement and 4 by vessel strike. One of the mortality events was from natural causes, and the cause of the remaining 25 could not be determined. Twenty-one carcasses were unexamined, 3 were only partially examined, and 1 was too decomposed. Of the 11 injury events, the SI values of 3 were reduced to 0. One was an adult with healing propeller scars (L11). Another animal was previously reported as entangled in an unknown configuration (L10) but was subsequently seen gear-free and healthy, and one animal self-released from a weir entrapment.

## **Minke whale**

The average annual minke whale SI and mortality value increased 24% (10.15 from 8.2) compared to 2013-2017. Minke whales had the highest number of confirmed mortalities: 169 events. Thirty-six deaths were confirmed entanglements, 6 caused by vessel strike, 29 from natural causes, and the remaining 98 were of undetermined cause. Eighty of these carcasses were not examined, 10 were partially examined, and 8 were too decomposed. One 2014 event was previously reported as a mortality caused by vessel strike, but upon further review it was changed to undetermined cause of death because we could not verify if the injuries sustained were pre- or postmortem. Of the 27 reported injuries, all were from entanglements, and 12 were determined to

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<sup>5</sup> <https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2020-humpback-whale-unusual-mortality-event-along-atlantic-coast>

be SI. The SI values of 11 events are 0 because the whales were disentangled. The 3 weir entrapments were determined to be NSI: 1 whale self-released, and 2 were released by the fisher. One animal carrying an unconfirmed configuration of gear showed evidence of health decline, so its SI value was increased to 1. One minke whale was anchored in gear and subsequently died as a result of a vessel strike. It was previously reported as an entanglement SI but counted as a vessel strike. Upon further review it is now considered an entanglement mortality event (Tables 4, 5; Appendix B).

An Unusual Mortality Event was declared for minke whales beginning in January 2017 because of documentation of elevated mortalities<sup>6</sup>. Twenty-seven confirmed carcasses were detected in 2017 and 30 in 2018. Details on cause of death (where determined) is included in Appendix B. The minke UME remains active at time of publication of this report, and details on additional events will be included in future reports.

## **Sei whale**

The average annual SI and mortality value for sei whales increased 20% from the previous period (1.2 from 1.0). There was 1 serious injury and 1 non-serious injury from entanglement. Of the 11 mortality events, 1 was the result of entanglement, 4 from vessel strikes, 1 from natural causes, and for 5 the cause of death could not be determined. One of these was not examined, and the remaining 4 were only partially examined.

## **Blue whale**

There were no changes in the SI and mortality values for blue whales between the 2013-2017 and 2014-2018 periods. The SI and mortality value remains 0. Ten mortality events were from natural causes, 2 events were mortalities of undetermined origin because they were not examined, and 1 carcass was too decomposed.

## **Gulf of Mexico Bryde's whale**

The Bryde's whale SI and mortality value remains 0. There were no reported injuries or mortalities during the time period.

## **Unidentified whales**

In 9 injury events (4%) and 38 mortality events (9%) we could not verify the species of whale involved. Though we could not identify species, we could confirm that there were 4 entanglement SI and 4 vessel strike SI.

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<sup>6</sup> <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2020-minke-whale-unusual-mortality-event-along-atlantic-coast>

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**Table 1. Baleen whale human-caused injury categories and criteria established by NMFS Instruction 02-038-01.**

**Instructions:** Each large cetacean injury event is recorded to the appropriate injury/information category by using all available information and scientific judgment, as described in the Procedural Directive. Criteria L10 - L12 accommodate events that lack details necessary for assignment to a more specific category. For a single injury event to which several categories apply, the injury determination with the highest level of severity is assigned. More detailed information or extended observation on an individual case/animal may justify a determination differing from the guidance of this table. An animal that is fully disentangled would generally be considered not seriously injured, unless there is additional evidence of a serious injury. Any injury leading to apparent significant health decline (e.g., skin discoloration, lesions near the nares, fat loss, increased cyamid loads) is a serious injury.

Category	Injury/ Information	Injury Determination	Criteria
L1	Ingested gear <sup>1</sup> or hook(s)	SI <sup>2</sup>	Swallowed, not simply draped through mouth.
L2	Constricting wrap	SI	Tightly wrapped line anywhere on body that indents the skin or does not shift with whale's movement, or line that is likely to become constricting as the whale grows. Indication that a whale that is heavily weighted, anchored, or has a discolored appendage is sufficient evidence of constricting gear.
L3	Loose wrap, bridled or draped gear	NSI <sup>3</sup>	Loosely wrapped gear that moves or shifts freely with whale's movement. Absence of constricting gear must be confirmed.
L4	External hook	NSI	Fishing hook of any size on any part of the body (i.e., not ingested).
L5a	Deep laceration <sup>4</sup>	SI	Laceration with the potential to affect major artery (e.g., laceration or severing at insertion of flipper/fluke), penetrating body cavity, or cutting bone.
L5b	Superficial laceration	NSI	Laceration not deeper than blubber layer, does not affect major artery, or cut bone.
L6a	Vessel ≥65' and >10 knots	SI	Struck by vessel equal or greater than 65' and traveling greater than 10 knots.
L6b	Vessel <65' and >10 knots	Prorate: 0.20	Struck by vessel smaller than 65' and traveling greater than 10 knots.
L6c	Vessel any size ≤10 knots	NSI	Struck by vessel of any size traveling at equal or less than 10 knots.
L7a	Vessel ≥65' and speed unknown	Prorate: 0.56	Struck by vessel equal or greater than 65' and traveling at unknown speed.
L7b	Vessel <65' and speed unknown	Prorate: 0.14	Struck by vessel smaller than 65' and traveling at unknown speed.
L8	Dependent <sup>5</sup>	SI	Dependent calf of a dead or seriously injured mother.
L9	Brought on deck	SI	Whale removed from water and brought on deck.
L10	Evidence of entanglement	Prorate: 0.75	Confirmed entanglement but insufficient information available to place in any of the L1-L4 criteria with a high degree of certainty.
L11	Ship strike laceration	Prorate: 0.52	Whale confirmed with non-entanglement related laceration but lacking details to place in either criteria L5a or L5b with a high degree of certainty. Includes observation of blood in water.
L12	Ship strike observed	Prorate: 0.36	Confirmed ship strike report where there is insufficient detail to assign event to criteria L6a – L7b with a high degree of certainty.

1. For the purposes of this table, "gear" is defined as any portion of fishing gear excluding the hook, which is considered separately.
2. SI = Serious Injury.
3. NSI = Non-Serious Injury.
4. For the purposes of this table, "laceration" is defined as a ragged incision or a tearing of the skin. Lacerations are caused by trauma that results in stretching, tearing, crushing, shearing, or avulsion of the tissue. Trauma, including blunt and sharp force trauma, includes a wound or bodily harm caused by an extrinsic agent.
5. "Dependent" for a large cetacean means a non-weaned calf. Weaned calves and juvenile large cetaceans are no longer dependent on their mothers.

**Table 2. Baleen whale human-caused mortality criteria established by Northeast Fisheries Science Center (NEFSC). Events were categorized as human-caused mortalities if 1 or more of the following indications were confirmed to be present on a whale carcass.**

Entanglement Mortality	<ol style="list-style-type: none"> <li>1. Fishing line constricted any body part and subdermal hemorrhaging or extensive necrosis was present at point of attachment.</li> <li>2. An extensive entanglement was evident.</li> <li>3. An entanglement likely prevented feeding.</li> <li>4. A code 2 (fresh dead) whale was pulled up during fishing operations.</li> </ol>
Vessel Strike Mortality	<ol style="list-style-type: none"> <li>1. Large linear laceration(s) was present anywhere on body, as opposed to just dorsally as in Kraus (1990).</li> <li>2. Large area(s) of subdermal hemorrhaging, hematoma, or edema was evident.</li> <li>3. Major skeletal fracturing was evident.</li> <li>4. A code 2 (fresh dead) carcass was found on the bow of a ship.</li> </ol>

**Table 3. Numbers of confirmed baleen whale injury events reported along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. Parentheses contain the numbers for each year during the period.**

Species	Western North Atlantic right whale ( <i>Eubalaena glacialis</i> )	Gulf of Maine humpback whale ( <i>Megaptera novaeangliae</i> )	Western North Atlantic fin whale ( <i>Balaenoptera physalus</i> )	Canadian East Coast minke whale ( <i>B. acutorostrata</i> )	Nova Scotian sei whale ( <i>B. borealis</i> )	Western North Atlantic blue whale ( <i>B. musculus</i> )	Northern Gulf of Mexico Bryde's whale ( <i>B. edeni</i> )	Unidentified whale spp.	Totals
Total confirmed injury events	<b>66</b> (16, 13, 13, 11, 13)	<b>142</b> (14, 28, 37, 24, 39)	<b>11</b> (2, 2, 6, 1, 0)	<b>27</b> (5, 7, 3, 5, 7)	<b>2</b> (0, 0, 1, 1, 0)	<b>0</b>	<b>0</b>	<b>9</b> (0, 3, 3, 1, 2)	<b>257</b>
Confirmed entanglement non-serious injuries	<b>35</b> (9, 6, 5, 9, 6)	<b>79</b> (2, 16, 22, 15, 24)	<b>4</b> (0, 0, 3, 1, 0)	<b>15</b> (3, 4, 1, 3, 4)	<b>1</b> (0, 0, 1, 0, 0)	<b>0</b>	<b>0</b>	<b>0</b>	<b>134</b>
Confirmed entanglement serious injuries <sup>b</sup>	<b>25</b> (6, 4, 8, 2, 5)	<b>45<sup>a</sup></b> (7, 9, 10, 8, 11)	<b>6</b> (2, 1, 3, 0, 0)	<b>12</b> (2, 3, 2, 2, 3)	<b>1</b> (0, 0, 0, 1, 0)	<b>0</b>	<b>0</b>	<b>4</b> (0, 2, 1, 1, 0)	<b>93</b>
Confirmed vessel strike non-serious injuries	<b>5</b> (0, 3, 0, 0, 2)	<b>12</b> (4, 3, 3, 0, 2)	<b>1</b> (0, 1, 0, 0, 0)	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b> (0, 0, 1, 0, 0)	<b>19</b>
Confirmed vessel strike serious injuries <sup>b</sup>	<b>1</b> (1, 0, 0, 0, 0)	<b>6<sup>a</sup></b> (1, 0, 2, 1, 2)	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b> (0, 1, 1, 0, 2)	<b>11</b>

<sup>a</sup> Includes 1 animal with both entanglement and vessel strike injuries. Tallied separately here to document total number of events. Counted in Table 5 as a serious injury from entanglement.

<sup>b</sup> Serious and prorated injuries are tallied as whole integers.

**Table 4. Summary of all unique baleen whale mortalities observed along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. Parentheses contain the numbers for each year during the period.**

Species	Western North Atlantic right whale ( <i>Eubalaena glacialis</i> )	Gulf of Maine humpback whale ( <i>Megaptera novaeangliae</i> )	Western North Atlantic fin whale ( <i>Balaenoptera physalus</i> )	Canadian East Coast minke whale ( <i>B. acutorostrata</i> )	Nova Scotian sei whale ( <i>B. borealis</i> )	Western North Atlantic blue whale ( <i>B. musculus</i> )	Northern Gulf of Mexico Bryde's whale ( <i>B. edeni</i> )	Unidentified whale spp.	Totals
Total confirmed mortalities	<b>31</b> (3, 3, 4, 17, 4)	<b>117</b> (12, 12, 28, 35, 30)	<b>33</b> (9, 2, 1, 9, 12)	<b>169</b> (17, 31, 27, 38, 56)	<b>11</b> (4, 2, 2, 2, 1)	<b>13</b> (9, 2, 0, 2, 0)	<b>0</b>	<b>38</b> (3, 10, 8, 9, 8)	<b>412</b>
Confirmed entanglement mortalities	<b>11</b> (2, 0, 2, 4, 3)	<b>11</b> (2, 1, 3, 2, 3)	<b>3</b> (1, 0, 0, 1, 1)	<b>36<sup>b</sup></b> (3, 7, 3, 12, 11)	<b>1</b> (0, 0, 0, 0, 1)	<b>0</b>	<b>0</b>	<b>0</b>	<b>62</b>
Confirmed vessel strike mortalities	<b>6</b> (0, 0, 1, 5, 0)	<b>24</b> (0, 4, 5, 8, 7)	<b>4</b> (2, 0, 0, 1, 1)	<b>6<sup>b</sup></b> (2, 1, 0, 2, 1)	<b>4</b> (3, 0, 1, 0, 0)	<b>0</b>	<b>0</b>	<b>0</b>	<b>44</b>
Confirmed mortalities, NOT vessel strike or entanglement	<b>0</b>	<b>9</b> (1, 0, 4, 4, 0)	<b>1</b> (0, 0, 0, 1, 0)	<b>29</b> (4, 3, 1, 11, 10)	<b>1</b> (00, 1, 0, 0, 0)	<b>10</b> (9, 0, 0, 1, 0)	<b>0</b>	<b>0</b>	<b>50</b>
Confirmed mortalities, IITD <sup>a</sup>	<b>14</b> (1, 3, 1, 8, 1)	<b>73</b> (9, 7, 16, 21, 20)	<b>25</b> (6, 2, 1, 6, 10)	<b>98</b> (8, 20, 23, 13, 34)	<b>5</b> (1, 1, 1, 2, 0)	<b>3</b> (0, 2, 0, 1, 0)	<b>0</b>	<b>38</b> (3, 10, 8, 9, 8)	<b>256</b>

<sup>a</sup> IITD = insufficient information to determine cause of death.

<sup>b</sup> Includes 1 animal with proximate cause of death from entanglement and ultimate cause of death from vessel strike. Counted in Table 5 as a mortality from vessel strike.

**Table 5. Average annual rate of confirmed human-caused injury and mortality by country of origin for baleen whale stocks along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018**

Event Location	Event Type	Western North Atlantic right whale ( <i>Eubalaena glacialis</i> )	Gulf of Maine humpback whale ( <i>Megaptera novaeangliae</i> )	Western North Atlantic fin whale ( <i>Balaenoptera physalus</i> )	Canadian East Coast minke whale ( <i>B. acutorostrata</i> )	Nova Scotian sei whale ( <i>B. borealis</i> )	Western North Atlantic blue whale ( <i>B. musculus</i> )	Northern Gulf of Mexico Bryde's whale ( <i>B. edeni</i> )	Unidentified whale spp.
US waters	Entanglement	0.2	2.05	0	3.15	0	0	0	0
	Vessel strike	0.5	5	0.8	0.8	0.8	0	0	0.16
Canadian waters	Entanglement	1.55	0.75	0.6	2.85	0	0	0	0
	Vessel strike	0.8	0	0	0.4	0	0	0	0
Unassigned waters	Entanglement	5.1	6.65	0.95	2.95	0.4	0	0	0.6
	Vessel strike	0	0.8	0	0	0	0	0	0
<b>Total Annual Human-caused Injury Rate</b>		<b>8.15</b>	<b>15.25</b>	<b>2.35</b>	<b>10.15</b>	<b>1.2</b>	<b>0</b>	<b>0</b>	<b>0.76</b>

**Appendix A. Details of reported baleen whale injury events along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. Assignment of Serious Injury (SI) criteria, SI values, and List of Fisheries (LOF) inclusion follow the guidance established by NMFS Instruction 02-038-01. Criteria categories described in Table 1.**

Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>							<b># events/sums:</b>		<b>66</b>	<b>23.77</b>	<b>38</b>	<b>47</b>
15-Jan-14	4394	12 mi E of Ossabaw Island, GA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new entanglement injuries indicating prior constricting gear on both pectorals and at fluke insertion. Injury to left ventral fluke. Evidence of health decline. No resights post February 2014.	L2	L2	1	-	Yes
16-Feb-14	4057/ FDR	38.3 nm ESE of Amelia City, FL	Entangled	Canada	Gear identified	Pot/trap	Line woven into baleen in left mouth and trailing. No wraps. Evident that entanglement constricted many body parts at earlier point. Trailing line shortened, shed remaining gear. Resights show right pectoral discolored, but injuries healing, and animal appears robust. Gear previously reported as unknown.	L2	L3	0	-	-
01-Mar-14	2479/ Scoliosis	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries on peduncle, right fluke insertion, and head indicating prior constricting entanglement. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
05-Mar-14	2810	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Evidence of constricting body wrap just aft of post-blowhole callosities and extensive damage to peduncle and leading edges of flukes. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
19-Mar-14	3360/ Horton	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, significant, healing, entanglement injuries to peduncle and leading edges of flukes. Resights indicate injuries healing.	L10	L10	0	Healing	Yes
23-Mar-14	1203/ Senator	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Evidence of a constricting rostrum wrap and extensive damage to peduncle and leading edges of flukes. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
25-Mar-14	1280/ Luna	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Damage to peduncle and fluke insertion. Evidence of constricting rostrum wrap. Many baleen plates missing from both sides of mouth. Resights indicate injuries healing.	L2	L2	0	Healing	Yes

a. Consider for List of Fisheries Inclusion

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
01-Apr-14	1142/ Kleenex	80.5 nm SE of Atlantic City, NJ	Entangled	Unknown First seen USA	-	Unknown	Entanglement discovered during photo processing just after the sighting. Constricting rostrum wrap with line trailing to at least midbody. Resighted in 2018, 2 lines exiting right mouth, crossing over head and entering left mouthline, no gear trailing. Health decline evident.	L2	L2	1	-	Yes
02-Apr-14	3390	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Evidence of a rostrum wrap, body wrap just aft of blowholes, and damage to right pectoral, peduncle, and leading fluke edges. Previously reported as Serious Injury. Subsequent sightings indicate fluctuation in health.	L2	L2	0	Healing	Yes
09-Apr-14	-	Cape Cod Bay, MA	Vessel strike	USA	Fresh injury or known location	-	Animal surfaced underneath a research vessel while it was underway (39 ft at 9 kts). Small amount of blood and some lacerations of unknown depth on lower left flank.	L6c, L11	L6c, L11	0.52	-	-
12-Apr-14	3293/ Porcia	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Evidence of a constricting rostrum wrap and damage to peduncle and fluke insertion. Resights indicate healing.	L2	L2	0	Healing	Yes
29-Jun-14	1131/ Snowball	180 nm E of Provincetown, MA	Entangled	Unknown First seen Canada	-	Unknown	At least 1, possibly 2, embedded rostrum wraps. Remaining configuration unclear but extensive. Animal in extremely poor condition - emaciated, heavy cyamid coverage, overall pale skin. No resights.	L2	L2	1	-	Yes
29-Jun-14	3333	180 nm E of Provincetown, MA	Entangled	Unknown First seen Canada	-	Unknown	No gear present but new, healing, entanglement injuries. Extensive damage to peduncle, leading, and trailing fluke edges. New head scar and right lip injury. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
04-Sep-14	4001	7.3 nm SE of Grand Manan, NB	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming with constricting rostrum wrap. Remaining configuration unknown. No resights post October 2014.	L2	L2	1	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>	
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>													
17-Sep-14	3279	9 nm SE of Grand Manan, NB	Entangled	Unknown	First seen Canada	-	Unknown	Free-swimming with heavy, green line over head cutting into nares. Remaining configuration unknown. In poor overall condition - heavy cyamids on head and blowholes. Left blowhole appears compromised. No resights.	L2	L2	1	-	Yes
18-Dec-14	3670/ Cherokee	11 nm E of Sapelo Sound, GA	Entangled	Unknown	First seen USA	-	Unknown	No gear present but new, healing, entanglement injuries. Portion of right lip torn away leaving an opening in mouth. Severe injuries to peduncle and leading and trailing fluke edges. Wrapping injuries on head and body. Possible damage to right pectoral. Resights indicate health decline.	L2	L2	1	-	Yes
06-Apr-15	4370	Cape Cod Bay, MA	Entangled	Unknown	First seen USA	-	Unknown	Encircling laceration at fluke insertion with potential to affect major artery. Source of injury likely constricting entanglement. No gear present. Evidence of health decline. No resights.	L2, L5a	L2, L5a	1	-	Yes
06-May-15	3999/ Braid	7.0 nm S of Wood End, Provincetown, MA	Vessel strike	USA	Fresh injury or known location	-		Fresh lacerations bisecting blowholes. Likely is the same large whale reported struck by a vessel on 03May2015, but cannot confirm. Resights indicate deformed, but healing and functioning blowholes.	L5a	L5a	0	Healing	-
11-May-15	4545	Cape Cod Bay, MA	Vessel strike	USA	Fresh injury or known location	-		Fresh, shallow wound on back from either a propeller or keel. Resights indicate healing.	L5b	L5b	0	-	-
13-Jun-15	-	8.8 nm NW of Westport, NS	Entangled	Unknown	First seen Canada	-	Unknown	Line through mouth, trailing 300-400m ending in 2 balloon-type buoys. Full entanglement configuration unknown. No resights.	L10	L10	0.75	-	Yes
05-Jul-15	4140	Middle Head, Ingonish, NS	Entrapped	Canada	Gear identified	Weir		Entrapped in weir. Released the following day. No injuries or contact with gear observed. Resights indicate healthy.	L10	n/a	0	Released	-
10-Jul-15	4530	Gulf of St Lawrence, QC	Entangled	Unknown	First seen Canada	-	Unknown	No gear present, but new, wrapping entanglement injuries on head, body, peduncle, and flukes. Resights indicate injuries healing.	L2	L2	0	Healing	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
18-Jul-15	3160/ White Cloud	23 nm NE of Glance Bay, NS	Entangled	Canada	Gear identified	Pot/trap	Constricting wraps around peduncle leading to weighted gear. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
07-Aug-15	3229	35.9 nm SE of Percé, QC	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new entanglement injuries on peduncle, fluke insertion, and both leading fluke edges. Resights in 2016 indicate acquisition of additional entanglement injuries, but all injuries appear to be healing.	L10	L10	0	Healing	Yes
02-Sep-15	BK01MB15	Plymouth Bay, MA	Vessel strike	USA	Fresh injury or known location	-	Abandoned calf of the year with superficial lacerations from a skeg and propeller along right flank and back. No resights post 05Sep2015.	L5b	L5b	0	-	-
13-Sep-15	1306/ Velcro	33.4 nm SE of Cape Sable Island, NS	Entangled	Unknown First seen Canada	-	Unknown	Green line fouled in baleen near tip of right rostrum and trailing 10 ft. Resights indicate still carrying gear and compromised health, but unable to confirm directly related to entanglement.	L3	L3	0	-	-
13-Sep-15	1327/ Scoop	Roseway Basin, NS	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new entanglement injuries on rostrum, peduncle, and fluke blade. Resights indicate possible health decline, but unable to confirm directly related to entanglement injuries.	L10	L10	0	Healing	Yes
28-Sep-15	-	22.2 nm E of Cape Elizabeth, ME	Entangled	Unknown First seen USA	-	Unknown	Unknown amount of line trailing from flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
29-Nov-15	3140/ Lou	6.4 nm E of Truro, MA	Entangled	Unknown First seen USA	-	Unknown	New, significant entanglement injuries indicating constricting wraps of head, flipper, and body. No gear visible, but unable to confirm if deeply embedded or no gear is present. In poor condition with gray skin and heavy cyamid coverage. No resights.	L2	L10	1	Health decline	Yes
29-Jan-16	1968/ Quatro	off Jupiter Inlet, FL	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of recent entanglement of unknown configuration. Significant health decline - emaciated, heavy cyamid coverage, damaged baleen. Resighted in April 2017, still in poor condition.	L10	L10	1	Health decline	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
01-Mar-16	4140/ Casper	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of recent, extensive, constricting entanglement. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
08-Mar-16	3229	Cape Cod Bay, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of recent, extensive, constricting entanglement. Resights indicate injuries healing.	L2	L2	0	Healing	Yes
19-May-16	3791/ Truffula	20.2 nm E of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	New entanglement injuries on peduncle. Left pectoral appears compromised. No gear seen. Significant health decline - emaciated with heavy cyamid coverage. No resights post August 2016.	L2	L2	1	-	Yes
26-Jul-16	1427	Gulf of St Lawrence, QC	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new entanglement injuries on peduncle and fluke insertions. No gear present. Resights show subsequent health decline - gray skin, rake marks, cyamids.	L10	L10	1	Health decline	Yes
01-Aug-16	2608	Bay of Fundy, NS	Entangled	Unknown First seen Canada	-	Unknown	New, severe entanglement injuries on peduncle and flukes. No gear seen. Resighted carrying gear (see 28Aug2016 event).	L10	L10	0	Healing	Yes
01-Aug-16	3323	Bay of Fundy, NS	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new, severe entanglement injuries on peduncle, fluke insertions, and leading edges of flukes. No gear present. Significant health decline - emaciated, cyamids patches, peeling skin. No resights.	L10	L10	1	Health decline	Yes
13-Aug-16	4057/ FDR	Bay of Fundy, NS	Entangled	Canada	Gear identified	Pot/trap	Free-swimming with extensive entanglement. Two heavy lines through mouth, multiple loose body wraps, multiple constricting wraps on both pectorals with lines across the chest, jumble of gear by left shoulder. Partially disentangled - left with line through mouth and loose wraps at right flipper that are expected to shed. Significant health decline - extensive cyamid coverage. Current entanglement appears to have exacerbated injuries from previous entanglement (see 16Feb2014 event). No resights.	L2	L3	1	Health decline	-
16-Aug-16	1152/ Necklace	2.0 nm S of Baccaro, NS	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming with line and buoy trailing from unknown attachment point(s). No resights.	L10	L10	0.75	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>	
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>													
28-Aug-16	2608	5.2 nm N of Brier Island, NS	Entangled	Unknown	First seen Canada	-	Unknown	Free-swimming with constricting wraps around rostrum and right pectoral. Line trails 50 ft aft of flukes. Significant health decline - heavy cyamid coverage and indication of fluke deformity. No resights.	L2	L2	1	-	Yes
22-Sep-16	3823	6.5 nm N of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with rostrum wrap leading to heavy gear below. Trailing buoys 150 ft aft of flukes. Partially disentangled - trailing line shortened, telemetry gear attached, cut made to rostrum wrap. Resights confirm shed remaining gear and injuries healing.	L2	L10	0	Rescued, Healing	Yes	
04-Dec-16	3405/ Fuse	3.5 nm E of Sandy Hook, NJ	Entangled	Unknown	First seen USA	-	Net	Lactating female. Free-swimming with netting crossing over blowholes and 1 line over back. Full configuration unknown. Calf not present, possibly already weaned. No resights. Previously reported as gear unknown.	L10	L10	0.75	-	Yes
20-Dec-16	2760	Massachusetts Bay, MA	Entangled	Unknown	First seen USA	-	Unknown	No gear present, but new entanglement injuries on head, lip, peduncle, and fluke insertion consistent with constricting gear. Resights indicate healing.	L2	L2	0	Healing	Yes
05-Jan-17	3530/ Ruffian	17.6 nm E of Cumberland Island, GA	Entangled	Canada	Gear identified	Pot/trap	Free-swimming with weighted lines exiting both sides of mouth, forming an open bridle, with remaining line trailing 450 ft to a single trap. Disentangled. Resights indicate healing.	L2	n/a	0	Rescue	-	
23-Apr-17	4146	2.9 nm W of Truro, MA	Entangled	USA	Fresh injury or known location	Unknown	Free-swimming with line exiting from left mouthline and trailing 50 ft aft of flukes. No wraps. Resights confirmed gear free and healing.	L3	L3	0	-	-	
27-Jun-17	1820/ Cello	46.0 nm SE of Sainte-Marie-Saint-Raphaël, NB	Entangled	Unknown	First seen Canada	-	Unknown	No gear present, but new injuries on head and peduncle consistent with constricting gear. Resights indicate healing.	L2	L2	0	Healing	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
04-Jul-17	3139/ Diablo	1.5 nm S of Nantucket, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but new extensive injuries on head and body consistent with constricting gear. Severe wounds on leading edge and insertion of flukes. Significant health decline. No resights post 10July2017.	L2	L2	1	-	Yes
05-Jul-17	4510	37.9 nm SE of Sainte-Marie- Saint-Raphaël, NB	Entangled	Canada	Gear identified	Pot/trap	Anchored with line exiting out right side of mouth. Disentangled. Resights indicate healing.	L2	n/a	0	Rescue	-
08-Jul-17	1317/ Ergo	22.3 nm E of Sainte-Marie- Saint-Raphaël, NB	Entangled	Canada	Gear identified	Pot/trap	Line through mouth and over rostrum, but configuration shifted throughout observation. Unclear if anchored or free-swimming. Confirmed gear free and resights indicate healing.	L3	L3	0	-	-
09-Jul-17	4123	22.5nm E of Sainte-Marie- Saint-Raphaël, NB	Entangled	Canada	Gear identified	Pot/trap	Multiple body, head, and flipper wraps descending to weighted gear. Disentangled. Resights indicate healing.	L2	n/a	0	Rescue	-
19-Jul-17	4094/ Mayport	26.5nm SE of Sainte-Marie- Saint-Raphaël, NB	Entangled	Canada	Gear identified	Pot/trap	Free-swimming with line exiting right side of mouth, crossing over back, and leading to buoys aft of flukes. Extensive severe injuries consistent with constricting gear. In poor condition. No resights.	L2	L3	1	Health decline	Yes
24-Jul-17	G048	14.9 nm E of Sainte-Marie- Saint-Raphaël, NB	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new injuries from right mouthline, over back, and on peduncle consistent with constricting entanglement. Resighted on 26Jul2017. Health condition fair.	L2	L2	0	Healing	Yes
29-Jul-17	1971/Nantucket	22.2 nm E of Sainte-Marie- Saint-Raphaël, NB	Entangled	Unknown First seen Canada	-	Unknown	No gear present, but new injuries on head, peduncle, and flukes consistent with constricting entanglement. Resights indicate healing.	L2	L2	0	Healing	Yes
28-Aug-17	3245	37.7nm SE of Gaspé, QC	Entangled	Canada	Fresh injury or known location	Unknown	Hogtied and anchored in gear. Resights indicate gear free and healing.	L2	L2	0	Gear free	-

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
13-Feb-18	1817/Silt	Cape Cod Bay, MA	Entangled	Unknown, First seen USA	-	Unknown	No gear present, but extensive new injuries consistent with constricting gear to head, right lip, peduncle, and leading fluke edges. Resights indicate healing.	L2	L2	0	Healing	Yes
15-Feb-18	3296	33 nm E of Jekyll Island, GA	Entangled	Unknown, First seen USA	-	Unknown	No gear present, but extensive recent injuries consistent with constricting gear on right flipper, peduncle, and leading fluke edges. Large portion of right lip missing. Extremely poor condition - emaciated with heavy cyamid load. No resights.	L2	L2	1	-	Yes
24-Feb-18	3823/Sundog	Cape Cod Bay, MA	Entangled	Unknown, First seen USA	-	Unknown	No gear present, but new extensive injuries on rostrum, peduncle, and leading fluke edges. Resights indicate healing.	L2	L2	0	Healing	Yes
01-Mar-18	4145	Cape Cod Bay, MA	Vessel strike	Unknown, First seen USA	-	-	New, minor, healed lacerations on left body and left dorsal fluke. Resights indicate healing.	L5b	L5b	0	-	-
12-May-18	4091	53.7 nm SE of Chatham, MA	Entangled	USA	Fresh injury or known location	Unknown	Free swimming with line trailing from right mouthline, at least 1 pectoral wrap, and trailing 50 ft. Buoy pinned close to flipper, but full configuration unclear. Resights confirm shed gear and healing.	L10	L10	0	Gear free	-
11-Jul-18	4612	33.5 nm E of Miscou Island, NB	Vessel Strike	Unknown, First seen Canada	-	-	New, minor healed propeller lacerations behind blowholes. Gray, sloughing skin with patchy cyamids. Resights indicate improved health.	L5b	L5b	0	-	-
13-Jul-18	3312	25.6 nm E of Miscou Island, NB	Entangled	Canada	Fresh injury or known location	Unknown	Free swimming with line through mouth and trailing both sides. Full configuration unknown - unable to confirm extent of flipper involvement. No resights.	L10	L10	0.75	-	-
21-Jul-18	4601/Gully	25.2 nm E of Miscou Island, NB	Entangled	Unknown, First seen Canada	-	Unknown	No gear present, but extensive new and healing injuries on rostrum, body, flippers, and flukes consistent with constricting gear. Deep injury to rostrum and right blowhole not functioning properly. Resights indicate healing and functioning blowhole.	L2	L2	0	Healing	Yes

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<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>												
30-Jul-18	3843	13 nm E of Grand Manan, NB	Entangled	Unknown, First seen Canada	-	Unknown	Free-swimming with buoy trailing 70 ft behind whale. Attachment point(s) unknown. Severe, raw injuries on peduncle and head. Partial disentanglement. Resighted with line exiting left mouth and no trailing gear. Possible rostrum and left pectoral wraps, but unable to confirm. Improved health, but final configuration unclear. No additional resights.	L10	L10	0.75	-	Yes
20-Aug-18	3960	43.1 nm ESE of Chandler, QC	Entangled	Unknown, First seen Canada	-	Unknown	Free-swimming with multiple rostrum wraps and damaged baleen, configuration shifting throughout observation. No visible trailing line. Resights confirm gear shed and healing.	L10	L10	0	Gear free	-
20-Dec-18	2310	28.5 nm SE of Nantucket, MA	Entangled	Unknown, First seen USA	-	Unknown	Free-swimming with open bridle through mouth. Resight in Apr2019 shows configuration changed, but unable to determine full configuration. Health appears stable. No additional resights	L3	L10	0.75	-	Yes
24-Dec-18	3208	30.8 nm S of Nantucket, MA	Entangled	Unknown, First seen USA	-	Unknown	No gear present. Evidence of new, healed, constricting body wrap. Health decline evident - gray, lesions, thin.	L2	L2	1	-	Yes
27-Dec-18	3950	16.3 nm S of Nantucket, MA	Entangled	Unknown, First seen USA	-	Unknown	No gear present. Evidence of new, healed entanglement injuries on lips, peduncle, and flukes. Resights indicate healing.	L10	L10	0	Gear free	Yes
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>								<b># events/sums:</b>	<b>142</b>	<b>41.77<sup>b</sup></b>	<b>69</b>	<b>60</b>
02-Jun-14	-	14.5 nm SE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoy and high flier trailing 100 ft aft of flukes. Attachment point(s) and configuration unknown. Unable to confirm if resighted on 21Jun2014.	L10	L10	0.75	-	Yes
09-Jun-14	Hangglide	31.2 nm WSW of Brier Island, NS	Entangled	Canada	Gear Identified	Pot/trap	Anchored, disentangled. Left with short line in mouth and over rostrum that is expected to shed. No resights.	L2	L3	0	Rescue	-

b. Single individual with 2 separate injuries. The greater SI value (0.75) is used in the Table 5 calculations following NMFS Instruction 02-038-01.

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
21-Jun-14	-	5 mi E of Gloucester, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming trailing a buoy and possibly another buoy or high flier aft. Attachment point(s) and configuration unknown. Unable to confirm if this is a resight of 02Jun2014.	L10	L10	0.75	-	Yes
16-Jul-14	2014 Calf of Canopy	Stellwagen Bank off MA	Vessel strike	Unknown First seen USA	-	-	Calf of the year with healing, shallow laceration across right back, forward of the dorsal. Resights indicate healthy.	L5b	L5b	0	-	-
16-Jul-14	Northstar	Stellwagen Bank off MA	Vessel strike	USA	Fresh injury or known location	-	New, raw, shallow lacerations in front of its dorsal. Resights indicate healthy.	L5b	L5b	0	-	-
18-Jul-14	-	Provincetown Harbor, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming, trailing short amount of line from left side of mouth. No other gear noted, but evidence of previous, more complicated, constricting entanglement. Current configuration deemed not life threatening. Unsuccessful disentanglement attempt. In poor condition - emaciated with some cyamids. No resights.	L2	L3	1	Health decline	Yes
30-Jul-14	-	Cape May, NJ	Vessel strike	USA	Fresh injury or known location	-	Small recreational vessel documented harassing whale. Apparent contact between bow and the back or right flank of animal. No noticeable injuries and animal exhibited normal behavior.	L6c	L6c	0	-	-
11-Aug-14	Monarch	Great South Channel	Entangled	Unknown First seen USA	-	Unknown	No gear present. Lactating female sighted with new, healing injuries indicating constricting gear around peduncle and leading edges of flukes. Resights indicate healthy.	L2	L2	0	-	Yes
14-Aug-14	-	off Long Beach, NJ	Vessel strike	Unknown First seen USA	-	-	New, healing vessel lacerations of undetermined depth. Animal already in compromised condition prior to vessel strike injury - skin lesions and cyamids on dorsal fluke blades. Seen entangled on 03Sep2014. Previously reported as L5b with SI value = 0.	L11	L11	0.52 <sup>b</sup>	-	-

b. Single individual with 2 separate injuries. The greater SI value (0.75) is used in the Table 5 calculations following NMFS Instruction 02-038-01.

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
03-Sep-14	-	off Long Beach, NJ	Entangled	Unknown First seen USA	-	Net	Monofilament netting over rostrum and possibly through mouth. Full configuration unknown. Small section removed by recreational boater. Animal behaved as though anchored for hours, though no evidence that it was. Animal eventually began to travel. Final configuration unknown. Seen with new vessel strike lacerations on 14Aug2014. Health compromised (lesions and cyamids on dorsal fluke blades) prior to either human interaction event. No resights. Previously reported as gear unknown and being gear free (SI value = 0) but gear status determined to be unconfirmed.	L10	L10	0.75 <sup>b</sup>	-	Yes
20-Sep-14	NYC0010	off Rockaway Beach, Long Island, NY	Entangled	Unknown First seen USA	-	Gillnet	Free-swimming with netting and rope with floats wrapping flukes. Entanglement noticed during photo processing. Full configuration unknown. No resights. Previously reported as gear unknown and US event.	L10	L10	0.75	-	Yes
01-Oct-14	-	12 nm E of Metompkin Inlet, VA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming whale with line and/or netting on left fluke blade. Gear appeared heavy. Full configuration unknown. No resights.	L10	L10	0.75	-	Yes
15-Oct-14	Buckshot	Stellwagen Bank off MA	Vessel strike	Unknown First seen USA	-	-	Sighted with new, raw, and healing superficial wound across midback. Resights indicate healthy.	L5b	L5b	0	-	-
15-Dec-14	-	8.5 nm S of Grand Manan, NB	Entangled	Canada	-	Pot/trap	Fisher found animal entangled in trawl. Grappled line, animal dove. Upon surfacing, appeared free of gear, but unable to confirm. Original and final configuration unknown. Previously reported as first seen in Canada.	L10	L10	0.75	-	-
01-Feb-15	-	12.1 nm S of Beaufort, NC	Entangled	Unknown First seen USA	-	Net	Constricting wrap at fluke insertion with line and monofilament netting trailing from flukes. Partial disentanglement by fisher. Left with embedded gear and at least 40 ft of trailing line and netting. Unknown if there are additional attachment points. No resights. Previously reported as gear unknown.	L2	L2	1	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
26-Apr-15	-	1.1 nm N of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Collar of extremely thick line forward of the flippers with no trailing gear. Line cutting into leading edge of left flipper. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
14-May-15	Spinnaker	77.2 nm E of Portsmouth, NH	Entangled	USA	Gear identified	Pot/trap	Hogtied and anchored in gear. Disentangled from this gear but gear from 11Sep2014 event remains in mouth - unable to pull free. Found dead in June 2015. Mortality attributed to 2014 entanglement event (See Appendix B).	L2	n/a	0	Rescue	Yes
20-Jun-15	-	27.6 nm SE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Constricting wraps of thin line around right fluke blade, cutting deeply into the leading and trailing edges. Loop cut, leaving draped, nonwrapping gear that is expected to shed. No resights.	L2	L3	0	Rescue	Yes
09-Jul-15	-	3.4 nm SE of Sandy Hook, NJ	Entangled	Unknown First seen USA	-	Unknown	High flier trailing 30 ft aft of flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
09-Jul-15	Lacuna	4.4 nm N of Brier Island, NS	Entangled	Unknown First seen Canada	-	Unknown	Bridle of line through mouth and leading to a large tangle of lines at right flank and trailing. Full configuration unknown. Resights confirm shed gear and healthy.	L10	L10	0	Gear free	-
11-Jul-15	-	7.2 nm N of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Unknown	Hogtied and anchored in gear. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
25-Jul-15	Putter	2.7 nm NE of North Truro, MA	Entangled	USA	Fresh injury or known location	Monofilament line	Monofilament line trailing from flukes. Attachment point(s) and configuration unknown. Resighted gear free and healthy.	L10	L10	0	Gear free	Yes
02-Aug-15	-	3.5 nm SE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Gillnet	Free-swimming with 2 sets of gear through its mouth. Primary gear: a closed bridle of gillnet joining midbelly and trailing just past flukes and restricting movement; Secondary gear: an open bridle with 1 end leading to a buoy and the other to a pot. Disentangled from both sets of gear. Left with very short amount of gillnet through mouth that is expected to shed. Emaciated. No resights. Gillnet is primary cause of injury and of unknown origin. Pot/trap is US gear.	L2	L3	1	Health decline	Yes

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
02-Aug-15	-	4.8 nm NE of Chatham, MA	Entangled	Unknown First seen USA	-	Monofilament line	Monofilament around flipper with attachment point(s) and remaining configuration unknown. Resighted gear free and healthy.	L10	L10	0	Gear free	-
02-Aug-15	-	14.8 nm NNE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Calf with line around tail leading to buoys 4 ft aft of flukes. Full configuration unknown. No resights post 22Aug2015.	L10	L10	0.75	-	Yes
14-Aug-15	-	1.7 nm N of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Trailing 170 ft line and buoy from left side of mouth, no wraps. Disentangled. Resight indicates healthy.	L3	L3	0	-	-
15-Aug-15	Mogul	Jeffreys Ledge, off NH	Vessel strike	USA	Fresh injury or known location	-	Fishing vessel <65 ft at > 10 kts struck animal. Whale watch vessel documented animal with minor lacerations across its back. Resights indicate healthy.	L5b, L6b	L5b, L6b	0	Healing	-
16-Aug-15	Cardhu	6.7 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Hook/ Monofilament	Monofilament line trailing from right fluke blade. Attachment point(s) and configuration unknown. Resighted - gear shifted to a hook in the peduncle with trailing line. Subsequent sightings confirm gear free and healthy.	L4, L10	L4, L10	0	Gear free	-
29-Aug-15	Crinkle	10 mi E of Chatham, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming, but hogtied. Disentangled. Resights indicate healthy.	L2	n/a	0	Rescue	Yes
01-Sep-15	2015 Calf of Owl	6.0 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Monofilament line trailing from flukes. Attachment point(s) and configuration unknown. Resighted gear free and healthy.	L10	L10	0	Gear free	-
07-Sep-15	-	12.2 nm NW of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Monofilament line trailing from flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
17-Sep-15	Epee	10.5 nm NNE of Race Point, Provincetown, MA	Vessel strike	USA	Fresh injury or known location	-	34 ft vessel witnessed traveling at 25-30 kts through aggregation of feeding whales. Audible contact was made. Vessel appeared to have engine damage. Whale observed with fresh abrasions on dorsal fin and superficial lacerations on right peduncle. Resumed feeding post-incident. Resights indicate healthy.	L5b, L6b	L5b, L6b	0	Healing	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
18-Sep-15	Azrael	9.4 nm NE of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Hook/Monofilament	Hooks and monofilament trailing from flukes. Attachment point(s) and configuration unknown. Resights indicate gear free and healthy.	L4, L10	L4, L10	0	Gear free	-
18-Sep-15	Diablo	6.5 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Lactating female. Monofilament trailing from left fluke blade. Attachment point(s) and configuration unknown. Resights indicate shed gear and healthy.	L10	L10	0	Gear free	-
20-Sep-15	Mogul	13.0 nm ESE of Hampton, NH	Entangled	USA	Fresh injury or known location	Hook/Monofilament	Hook in left fluke blade with monofilament trailing. No wraps. Resights indicate gear free and healthy.	L4	L4	0	-	-
24-Sep-15	-	13.5 nm ESE of Hampton, NH	Entangled	USA	Gear identified	Anchor system	Became entangled in anchor line of fishing vessel during the night. Believed to be towing the entire system - 45 lb anchor, 20 ft of chain, 350 ft of anchor line, 150 ft of float line, polyball and acorn buoy - in an unknown configuration. No resights.	L10	L10	0.75	-	Yes
25-Sep-15	-	0.6 nm N of Menemsha Basin Harbor, MA	Entangled	Unknown First seen USA	-	Unknown	Evidence of constricting body wrap, unable to confirm if gear embedded. Trailing 10 ft of line from flukes, full configuration unknown. Animal emaciated with heavy cyamids. No resights.	L2	L10	1	Health decline	Yes
18-Nov-15	Lunar	6.9 nm N of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Monofilament along left side of body and over the peduncle. Attachment point(s) and configuration unknown. Resights indicate gear free and healthy.	L10	L10	0	Gear free	-
04-Dec-15	-	8.8 nm SW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Unknown	Wraps on both fluke blades with associated buoy. Full configuration unclear, but animal weighted/anchored. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
04-Dec-15	-	16.5 nm NW of Brier Island, NS	Entangled	Canada	Gear identified	Pot/trap	Likely anchored in gear. Partially disentangled by fishers. Left free-swimming with a body wrap aft of blowholes and 2 balloon floats close to body. Final configuration unknown. No resights.	L2	L10	0.75	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
13-Dec-15	-	off Virginia	Vessel strike	USA	Fresh injury or known location	-	Fresh lacerations that do not appear to penetrate blubber layer. No resights	L5b	L5b	0	-	-
15-Dec-15	-	3.7 nm SE of North East Harbour, NS	Entangled	Canada	Gear identified	Pot/trap	Likely anchored in gear. Partially disentangled by fishers. Left free-swimming with buoy and lines around front of whale and lines on the peduncle. Attachment point(s) and final configuration unknown. No resights.	L2	L10	0.75	-	-
07-Jan-16	-	1 nm S of Great Captain Island, Greenwich, CT	Entangled	USA	Gear Identified	Pot/trap	Anchored in gear with line through mouth and around tail. Partially disentangled - all gear removed from mouth and some from tail. Post intervention whale was using pectorals to swim and tail was down, but unable to confirm if any gear remained and in what configuration. No resights.	L2	L10	0.75	-	Yes
09-Jan-16	MAHWC-254	2.6 nm NE of Fort Story, VA	Vessel strike	USA	Fresh injury or known location	-	Deep laceration across back - penetrating into muscle and impacting ability to dive. No resights.	L5a	L5a	1	-	-
11-Jan-16	-	1.2 nm SE of Hatteras, NC	Entangled	USA	Gear Identified	Gillnet	Anchored in gear. Forward body wrap pinning flippers. Wrap shifted to peduncle and flukes. Disentangled. No resights.	L2	n/a	0	Rescue	-
14-Jan-16	-	1.0 nm NE of Fort Story, VA	Entangled	USA	Gear Identified	Gillnet	Not anchored, but movement restricted by weight. Line over head, through mouth, and around tail. Buoy and polyballs attached by responders which were recovered with buoyline the following day. Fisher hauled remaining gear and determined all gear recovered confirming animal shed gear. No resights.	L2	n/a	0	Rescue	Yes
16-Jan-16	MAHWC-250	2.3 nm NE of Fort Story, VA	Vessel strike	USA	Fresh injury or known location	-	Two parallel lacerations across distal end of right fluke blade. No resights.	L5b	L5b	0	-	-
03-Mar-16	MAHWC-251	off Virginia Beach, VA	Vessel strike	USA	Fresh injury or known location	-	Deep laceration on left fluke blade, near insertion. Fluke blade necrotic. No resights.	L5a	L5a	1	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
21-Apr-16	-	off Shackleford Banks, NC	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of constricting body and peduncle wraps. Injuries appear to be healing. No resights.	L2	L2	0	Healing	Yes
24-Apr-16	-	1 nm SE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with 2 buoys - submerged orange at 5 ft and white bullet at 10 ft - trailing behind flukes. Line appears to wrap flukes. Subsequent sighting only reported white buoy, but only 1 surfacing and no photos. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
14-May-16	GOM-1609	0.5 nm SW of Wood End, Provincetown, MA	Entangled	USA	Gear Identified	Pot/trap	Anchored with line through mouth and buoy near right pectoral. Partially disentangled - all gear removed except short line through mouth that expect to shed. No resights.	L2	L3	0	Rescue	Yes
18-May-16	Foggy	7.6 nm NE of Gloucester, MA	Entangled	Unknown First seen USA	-	Unknown	Anchored with lines through mouth and 2 embedded body wraps with large float alongside by right body. Entangling gear fouled in 2 other sets of gear. Animal in emaciated. Partial disentanglement - left with an open bridle of 2 lines through the mouth. Subsequent sightings show lines had relooped into a closed bridle and health continued to decline. No resights post July 2016.	L2	L3	1	Health decline	Yes
21-May-16	-	0.4 nm E of Mantoloking, NJ	Entangled	Unknown First seen USA	-	Gillnet	Full configuration unknown, but minimally wrapped in gear from head to dorsal. Unknown amount of gear removed by public. Unable to confirm if gear free. No resights.	L2	L10	0.75	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
26-May-16	GOM-1552	1.5 nm SE of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with constricting line around base of flukes and both fluke blades. Line trailing 100 ft. Animal swimming with flippers. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
16-Jun-16	Freckles	3.4 nm E of Wellfleet, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoy 60 ft aft of flukes. Attachment point(s) and configuration unknown. Poor condition - emaciated and pale. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
25-Jun-16	GOM-1689	0.4 nm E of Monomoy, MA	Vessel strike	USA	Fresh injury or known location	-	Strike witnessed. 35-40 ft vessel at approximately 25 kts. Blood in water seen. Resights indicate wounds have healed.	L6b, L11	L6b, L11	0	Healing	-
02-Jul-16	2016 Calf of Twine	9.9 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Hook/Monofilament	Red monofilament hook lure on belly. No resights.	L4	L4	0	-	-
05-Jul-16	-	2.4 nm SE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with embedded wraps at base of flukes and buoy trailing 50 ft. Partially disentangled. Peduncle wraps loosened and expected to shed. Prognosis poor - flukes compromised and deteriorating. Animal swimming with flippers. No resights.	L2	L3	1	Health decline	Yes
26-Jul-16	Scratch	9.9 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line over back. Attachment point(s) and configuration unclear. Resights indicate gear free and healthy.	L10	L10	0	Gear Free	-
08-Aug-16	-	5.0 nm NE of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Unknown	Anchored with line through mouth - exiting left mouth to weight at depth, exiting right mouth and trailing to pectoral. Partially disentangled - left with short line through mouth that expect to shed. No resights.	L2	L3	0	Rescue	Yes
14-Aug-16	Storm	10.1 nm N of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Lactating female. Free-swimming with line through mouth - exiting right mouth and ending at pectoral, left mouth trailing 90 ft. Disentangled. Healthy resights until subsequent entanglement (see 19Oct2016 event).	L3	L3	0	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
15-Aug-16	Victim	21.5 nm SSW of Grand Manan Island, NB	Entangled	Canada	Gear identified	Pot/trap	Lactating female anchored in gear. Line through mouth, twisting together, and leading to depth. Disentangled. Resights indicate healthy.	L2	n/a	0	Rescue	-
16-Aug-16	A+	30.0 nm E of Nantucket, MA	Entangled	USA	Gear identified	Monofilament line	Entanglement witnessed. Free-swimming with monofilament draped across rostrum. Attachment point(s) and configuration unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
02-Sep-16	-	14.9 nm SE of Gloucester, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming and trailing red buoy. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
09-Sep-16	GOM-1602	off Race Point, Provincetown, MA	Vessel strike	USA	Fresh injury or known location	-	Raw superficial lacerations on distal end of left dorsal fluke. Resight indicates healing.	L5b	L5b	0	-	-
15-Sep-16	Echo	5.9 nm N of Race Point, Provincetown, MA	Entangled	USA	-	Pot/trap	Lactating female. Free-swimming with line through mouth. Buoys trail along both sides, no trailing line visible, unclear if weight present on line exiting right mouth. Resights confirm gear free and healthy. Previously reported as first seen in US waters in unknown gear.	L10	L10	0	Gear Free	-
16-Sep-16	-	3.6 nm NE of Chatham, MA	Entangled	USA	Gear identified	Pot/trap	Anchored with line through mouth and buoy 60 ft aft of flukes. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
16-Sep-16	Tear	6.6 nm N of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Free-swimming with monofilament trailing from flukes. Attachment point(s) and configuration unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
17-Sep-16	Crisscross	9.1 nm NE of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Free-swimming with monofilament trailing from flukes. Attachment point(s) and configuration unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
27-Sep-16	GOM-1626	off Bliss Island, NB	Entrapped	Canada	Gear identified	Weir	Entrapped in weir for approximately 1 day. Released.	L10	n/a	0	Release	-
08-Oct-16	Aswan	9.5 nm N of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament line	Free-swimming with 2 strands of monofilament trailing from right fluke. Attachment point(s) and configuration unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
19-Oct-16	Storm	0.5 nm N of Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Lactating female. Free-swimming with line through mouth and both ends trailing 50-60 ft aft of flukes. Disentangled. Resights confirm gear free and healthy.	L3	L3	0	-	-
25-Oct-16	SEUS-1606	3.9 nm SW of Beaufort, NC	Entangled	USA	Gear identified	Gillnet	Initial configuration unknown - possibly anchored, but unable to confirm. Final configuration is and open bridle at fluke. No resights.	L10	L3	0	-	-
13-Nov-16	NYC0052	off Belmar, NJ	Entangled	Unknown First seen USA	-	Monofilament line	Free-swimming with monofilament over peduncle and trailing from flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
14-Nov-16	-	4.7 nm E of Stone Harbor, NJ	Entangled	USA	Gear identified	Pot/trap	Free-swimming with line wrapping left flipper and flukes and trailing. Full configuration unclear. No resights. Previously reported as first seen in US waters in unknown gear.	L10	L10	0.75	-	Yes
04-Dec-16	-	1.1 nm S of Quogue, NY	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with high flier near flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
08-Dec-16	GOM-1636	3.8 nm NE of Hull, MA	Entangled	USA	Gear identified	Pot/trap	Anchored by 2 wraps around the peduncle. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
19-Dec-16	-	0.1 nm E of Tiverton, NS	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming with line around tail and buoy trailing. Full configuration unknown. No resights.	L10	L10	0.75	-	Yes
20-Dec-16	GOM-1633	1.2 nm S of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Entanglement witnessed. Initially mouth, peduncle, and flukes involved in unknown configuration. Entanglement resolved to line through mouth, over back, with 2 lines and buoy trailing 150 ft. Disentangled. No resights.	L10	L3	0	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
05-Jan-17	-	6.2 nm E of Virginia Beach, VA	Entangled	USA	Gear identified	Gillnet	Bullet buoy, high flyer, and netting on head. Full configuration unknown. Disentangled by fisher. Gear inspected - no significant portion missing or damaged. No photos taken to determine ID or sighting history.	L10	n/a	0	Rescue	-
14-Feb-17	-	off Virginia Beach, VA	Vessel strike	USA	Fresh injury or known location	-	Two new, deep lacerations fore and aft of dorsal fin. No resights.	L5a	L5a	1	-	-
15-Jul-17	2016 Calf of Thumper	6.3nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Hook/Monofilament	Free-swimming with hook and monofilament trailing from right fluke blade. Attachment point(s) unknown. Resighted on 28Jul2017 but unable to confirm gear free. No additional resights.	L10	L10	0.75	-	Yes
18-Jul-17	2017 Calf of Firefly	3.7nm NE of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Hook/Monofilament	Dependent calf. Free-swimming with green lure and monofilament on left fluke blade. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
20-Jul-17	Firefly	8.5nm N of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Lactating female. Free-swimming with monofilament on tip of left fluke blade. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
26-Jul-17	Sprinkles	8.2nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with monofilament trailing from left fluke blade. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
10-Aug-17	2017 Calf of Hancock	5.2nm NNE of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Entanglement event witnessed. Dependent calf with line looped over right pectoral and buoy trailing 75 ft aft of flukes. Resights confirm gear free and healthy until subsequent entanglement on 18Aug2017.	L3	L3	0	-	-
14-Aug-17	2014 Calf of Echo	4.7nm NE of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with monofilament trailing down both sides of body and off the flukes. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
14-Aug-17	Perseid	4.5nm NE of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with monofilament trailing from trailing edge of right fluke. No wraps. Resights confirm gear free and healthy.	L3	L3	0	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
18-Aug-17	2017 Calf of Hancock	Southern Stellwagen Bank	Entangled	USA	Fresh injury or known location	Monofilament	Dependent calf. Free-swimming with monofilament draped over dorsal fin. Attachment point(s) unknown. Line shifting during observation. Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
19-Aug-17	-	0.5nm off of Smith Point County Park, Long Island, NY	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoy trailing 10 ft aft of flukes. Resighted on 11Sep2017 with buoy 30-50 ft aft. Full configuration unknown. No additional sightings.	L10	L10	0.75	-	Yes
28-Aug-17	Drifter	10.2nm SE of Frenchboro, ME	Entangled	Unknown First seen USA	-	-	Single line wrapping peduncle and left fluke blade leading to weighted gear. Disentangled. No resights. Previously reported as US event.	L2	n/a	0	Rescue	Yes
12-Sep-17	2016 Calf of Sanchal	1.1nm E of Truro, MA	Entangled	USA	Gear identified	Pot/trap	Anchored in 3 sets of gear. Disentangled. Resights indicate healthy.	L2	n/a	0	Rescue	Yes
18-Sep-17	-	29.3nm SE of Jonesport, ME	Entangled	Canada	Gear identified	Pot/trap	Anchored in gear. Fisher responded and animal not relocated. Hauled gear - 10 pots and buoy line missing from 30 pot trawl.	L2	L10	0.75	-	-
24-Sep-17	GOM-1744	7.7nm NNW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Pot/trap	Free-swimming with constricting wrap around left pectoral that trailed under body and over right fluke blade. One line ending at a buoy and one ending at a trap. Partially disentangled. Left with 60 ft of line draped over pectoral that is expected to shed. Resighted 18Oct2017, unable to confirm gear free. No additional sightings.	L2	L3	0	-	Yes
01-Oct-17	2017 Calf of Gumdrops	7.4nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Unknown	Dependent calf. Free-swimming with line through mouth that twisted together in a bridle under the jaw. Likely to become constricting as the animal grew. Lines trailing to buoys. Resights confirm gear free and healthy.	L2	L2	0	Gear Free	-
03-Oct-17	GOM-1747	6.4nm NW of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Monofilament	Free-swimming with monofilament looped over and trailing from left fluke tip. Sighted with subsequent entanglement on 21Oct2017. Unable to confirm monofilament had been shed at that point.	L3	L3	0	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
06-Oct-17	2015 Calf of Xylem	3.9 nm NE of Chatham, MA	Entangled	Unknown First seen USA	-	Gillnet	Free-swimming with portion of gillnet panel through mouth and tightly wrapping head and rostrum. Resighted in 2018 with same configuration. Partially disentangled - rostrum wrap cut, bitter ends trailing from both mouthlines. Resights confirmed gear free and healthy.	L2	L3	0	-	Yes
10-Oct-17	-	3.0nm NE of Gloucester, MA	Entangled	USA	Gear identified	Pot/trap	Anchored in gear. Partially disentangled by harbormaster. Unable to confirm gear free. No resights.	L2	L10	0.75	-	Yes
14-Oct-17	-	6.0nm N of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with white, fender-type buoy close to right flank. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
21-Oct-17	2016 Calf of Echo	9.1nm NE of Gloucester, MA	Entangled	USA	Fresh injury or known location	Unknown	Anchored in gear. Disentangled. No resights.	L2	n/a	0	Rescue	Yes
21-Oct-17	GOM-1747	1.0nm SE of Quogue, Long Island, NY	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoy in tow. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
12-Nov-17	-	1.0nm S of Atlantic Beach, NY	Entangled	Unknown First seen USA	-	Monofilament	Free-swimming with monofilament trailing from right fluke. Attachment point(s) unknown. No resights.	L10	L10	0.75	-	Yes
30-Nov-17	-	17nm S of Grand Manan, NS	Entangled	Canada	Gear identified	Pot/trap	Anchored by tail area in trawl between 2 balloons. Fisher cut lines. Unable to confirm gear free. No resights.	L2	L10	0.75	-	-
22-Apr-18	Lascaux	7.6 nm SW of Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with line through mouth. Right side leading to 2 buoys and left side leading down to weighted gear. Lines entangled together near the peduncle forming a closed loop. Disentangled. Resights indicate healthy.	L3	L3	0	-	-
20-Jun-18	Sutures	3.5 nm NW of Brier Island, NS	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming with line through mouth and trailing approximately 1 body length beyond flukes, no wraps. Resighted gear free.	L3	L3	0	-	-
21-Jun-18	Crinkle	12.1 nm SE of Chatham, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming, trailing monofilament from unknown attachment point(s). Relocated, no gear visible, but unable to confirm gear free. Resights confirm gear free and healthy.	L10	L10	0	Gear free	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
14-Jul-18	2018 Calf of Pierce	3.6 nm N of Brier Island, NS	Entangled	Canada	Fresh injury or known location	Unknown	Free-swimming dependent calf with multiple head wraps likely to become constricting over time. Partially disentangled - short sections of line in baleen likely to shed. Resights confirm gear free and healing.	L2	L3	0	Rescue	-
14-Jul-18	2017 Calf of Rapier	5.8 nm W of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with deeply embedded line at insertion of flukes with line trailing, buoy pinned near fluke. Partial disentanglement - remaining gear held in place by wounds, hope will shed. Compromised health - widespread cyamids, skin pitting. No resights.	L2	L3	1	Health decline	Yes
14-Jul-18	-	0.5 nm S of Nantucket, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line crossing over back. Resight showed emaciated with line over back, a bundle of line by right shoulder, and line around peduncle. Suspect attachment points are mouth and/or flippers, but unable to confirm. No resights.	L10	L10	1	Health decline	Yes
20-Jul-18	2016 Calf of Sanchal	Stellwagen Bank off MA	Vessel strike	Unknown First seen USA	-	-	New, healed superficial lacerations across back. Healthy resights	L5b	L5b	0	-	-
20-Jul-18	Cardhu or Orbit	5 nm N of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Monofilament	Free-swimming with unknown configuration. Unclear which animal involved, both sighted gear free from this event. Treating this as a single entanglement event since unlikely both animals made contact with gear.	L10	L10	0	Gear free	-
20-Jul-18	Milkweed or Mogul	6.7 nm NW of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Monofilament	Free-swimming with unknown configuration. Unclear which animal involved, both sighted gear free from this event. Treating this as a single entanglement event since unlikely both animals made contact with gear.	L10	L10	0	Gear free	-
20-Jul-18	Owl	5.7 nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with unknown attachment point(s). Resights confirm shed gear and healing.	L10	L10	0	Gear free	-
21-Jul-18	Rhino	7.2 nm E of Hampton Beach, NH	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with monofilament trailing from left fluke. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
23-Jul-18	-	Great Duck Island, Grand Manan, NB	Entangled	Canada	Gear identified	Seine	Entrapped in weir. Became entangled in seine fisher used to remove from weir. Successfully released from both seine and weir. No resights.	L10	n/a	0	Rescue	-
30-Jul-18	NYC0097	1.0 nm SE of Montauk, NY	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line through mouth exiting right and trailing aft, exiting left and leading to multiple constricting wraps around left pectoral, then trailing 3-4 ft. Partially embedded in flipper, large raw wound. No resights.	L2	L2	1	-	Yes
30-Jul-18	Cardhu	8.2 nm NW of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Anchor system	Free-swimming in anchoring system. Configuration of gear changed throughout event: Open bridle through mouth became closed bridle with multiple peduncle wraps. Partial disentanglement - removed mooring ball, anchor and jumble of line aft of flukes. Final configuration unknown but included closed bridle trailing to a small jumble of line at flukes. No resights.	L2	L10	0.75	-	Yes
01-Aug-18	Dyad	7.8 nm NW of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Monofilament	Free-swimming lactating female with monofilament draped over left fluke blade and trailing 50 ft, no wraps. Partially disintegrated - shortened trailing line to 15 ft aft of flukes to minimize interference of gear with nursing. Resights confirm gear free and healing.	L3	L3	0	-	-
03-Aug-18	Sabot	0.6 nm W of Brier Island, NS	Entangled	Canada	Fresh injury or known location	Unknown	Free-swimming lactating female with single line through mouth and trailing 75-100 ft from each side. No wraps. No resights.	L3	L3	0	-	-
05-Aug-18	-	10 nm E of Long Island, NY	Entangled	Unknown First seen USA	-	Unknown	Free-swimming, emaciated whale with constricting and embedded wraps at fluke insertion and on left fluke blade. Swimming by use of flippers. No resights.	L2	L2	1	-	Yes
06-Aug-18	Komodo	9.2 nm NW of Race Point, Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line through mouth and joining in a small jumble underneath body. Multiple resights indicate entanglement still present through November 2018, but health stable. Confirmed gear free in August 2019.	L3	L3	0	-	-

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
07-Aug-18	Samara	6.2 nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming with monofilament line over left fluke with unknown attachment point(s). Resights confirm shed gear and healing.	L10	L10	0	Gear free	-
09-Aug-18	Dross	7.8 nm NW of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Monofilament	Free-swimming lactating female with dependent calf. Monofilament from unknown attachment point(s). Unclear which animal involved, but resights confirm both gear free and healing.	L10	L10	0	Gear free	-
11-Aug-18	-	Cape May, NJ	Vessel strike	USA	Fresh injury or known location	-	At least 11 deep lacerations starting at dorsal fin and continuing down dorsal ridge towards fluke. Ulcerated lesion on right pectoral with some evidence of healing.	L5a	L5a	1	-	-
15-Aug-18	-	Stellwagen Bank off MA	Vessel strike	USA	Fresh injury or known location	-	130 ft whale watch vessel at 28 kts. No blood in water.	L6a	L6a	1	-	-
16-Aug-18	Mogul	4.9 nm E of Rockport, MA	Entrapped	USA	Gear identified	Seine	Event witnessed - entrapped in seine. Relocated animal free-swimming with minor abrasions and not carrying any gear. Healthy resights.	L10	L10	0	Gear free	-
16-Aug-18	Lollipop	14.4 nm E of Rockport, MA	Entrapped	USA	Gear identified	Seine	Event witnessed - entrapped in seine, no contact made with gear. Self released. Healthy resights.	L10	L10	0	Gear free	-
17-Aug-18	Samara	8.0 nm NW of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Hook	Event witnessed - gear trawled over whale as it was logging. Hook and lure snagged on back. Resights confirmed shed gear and healing.	L4	L4	0	Gear free	-
27-Aug-18	Patches	6.8 nm E of Rockport, MA	Entangled	Unknown First seen USA	-	Monofilament	Free-swimming with monofilament trailing from right fluke. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear free	-
30-Aug-18	Owl	7.3 nm SE of Isles of Shoals, NH	Entrapped	USA	Gear identified	Seine	Event witnessed - made contact with floatline but swam out free of gear after fishers lowered net. Resights indicate healthy.	L10	n/a	0	Released	-

**Appendix A. Details of reported baleen whale injury events along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. Assignment of Serious Injury (SI) criteria, SI values, and List of Fisheries (LOF) inclusion follow the guidance established by NMFS Instruction 02-038-01. Criteria categories described in Table 1.**

Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
30-Aug-18	Chablis	7.3 nm SE of Isles of Shoals, NH	Entrapped	USA	Gear identified	Seine	Event witnessed - self-released from seine. Resights indicate healthy.	L10	L10	0	Gear free	-
01-Sep-18	2016 Calf of Sanchal	9.4 nm S of Chatham, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with line through mouth, one ending in a hog ring eye and the other ending in a surface system including a buoy. Partially disentangled - shortened lines on both sides to trail to just forward of the flukes. Resights confirm gear free and healing.	L3	L3	0	-	-
02-Sep-18	-	Brier Island, NS	Vessel strike	Canada	Fresh injury or known location	-	Whale watch zodiac hit by peduncle of whale as it dove. Vessel <65 ft and <10 kts.	L6c	L6c	0	-	-
02-Sep-18	Lollipop	3.9 nm E of Chatham, MA	Entangled	USA	Gear identified	Monofilament	Event witnessed. Monofilament from unknown attachment point(s) trailing over left fluke. Full configuration unknown. Healthy resights.	L10	L10	0	Gear free	-
03-Sep-18	Shuffleboard	1.0 nm N of Rockport, MA	Entangled	USA	Gear identified	Monofilament	Free-swimming with monofilament trailing over left fluke from unknown attachment point(s). Resights confirm gear free.	L10	L10	0	Gear free	-
08-Sep-18	-	3.1 nm SE of Gloucester, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line and buoy trailing. Full configuration unknown. No resights.	L10	L10	0.75	-	Yes
14-Sep-18	Dross	6.1 nm NW of Race Point, Provincetown, MA	Entangled	USA	Fresh injury or known location	Monofilament	Free-swimming lactating female with dependent calf. Line looped around left fluke tip, no additional attachment points or wraps. Partially disentangled - removed 250 ft of line to reduce apparent interference with nursing. Resights confirm gear free and healthy.	L3	L3	0	-	-
21-Sep-18	-	20 nm E of Rockport, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with 2-3 buoys trailing 30-40 ft aft of flukes. Attachment point(s) and full configuration unknown. No resights.	L10	L10	0.75	-	Yes
23-Sep-18	-	10.5 nm SE of Gloucester, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line on fluke from unknown attachment point(s). No resights.	L10	L10	0.75	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>												
23-Sep-18	-	14.1 nm S of Martha's Vineyard, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoys trailing from unknown attachment point(s). No resights.	L10	L10	0.75	-	Yes
29-Sep-18	2016 Calf of Ravine	E of Campobello Island, NB	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming with orange float 40 ft aft of flukes. Attachment point(s) unknown. Resights confirm gear free and healthy.	L10	L10	0	Gear free	-
13-Dec-18	-	0.7 nm E of Mayport, FL	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with unknown attachment point(s) and configuration. Partly disentangled by public. Final configuration unknown. No resights.	L10	L10	0.75	-	Yes
<b>Western North Atlantic fin whale (<i>Balaenoptera physalus</i>)</b>									<b>11</b>	<b>4.75</b>	<b>3</b>	<b>6</b>
									<b># events/sums:</b>			
23-Jun-14	-	29.9 nm SE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming, trailing 200 ft of line. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
20-Aug-14	-	30.3 nm E of Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming, trailing buoy and 200 ft of line aft of flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
06-Jun-15	-	41.8 nm SSE of Bar Harbor, ME	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with 2 buoys and 80 ft of line trailing from fluke. Line cutting deeply into right fluke blade. Emaciated. No resights.	L2	L2	1	-	Yes
16-Sep-15	-	49.9 nm E of Corolla, NC	Vessel strike	Unknown First seen USA	-	-	Series of raw and healing lacerations potentially penetrating body cavity, but unable to confirm. Injuries healing and animal in apparent good health.	L11	L11	0	Healing	-
18-Jun-16	CCS_1308	2.3 nm NE of Truro, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming towing 400 ft of line with bullet buoy. Resighted 22Jun2016. Bridle through mouth leading to a twist of lines near the dorsal. Two buoys trailed 60 ft aft of flukes. Partially disentangled - left with short line through mouth that expect to shed. No resights.	L3	L3	0	-	-

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Western North Atlantic fin whale (<i>Balaenoptera physalus</i>)</b>												
06-Jul-16	-	32.5 nm E of Truro, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line trailing 60-70 ft aft of flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
08-Jul-16	-	60 nm NE of Virginia Beach, VA	Entangled	Unknown First seen USA	-	Hook/ Monofilament	Free-swimming with monofilament and lures in tow along left flipper area. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
27-Jul-16	-	17 nm N of Race Point, Provincetown, MA	Entangled	USA	Gear identified	Pot/trap	Free-swimming with line through mouth and trailing a buoy. Disentangled. No resights.	L3	L3	0	-	-
17-Aug-16	-	Grand Manan, NB	Entrapped	Canada	Gear identified	Weir	Entrapped in weir for less than a day. Self-released. Large hole in bottom twine, but no gear missing. No resights.	L10	n/a	0	Gear free	-
14-Dec-16	-	1.4 nm S of Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with buoy trailing 6-8 ft aft of flukes. Attachment point(s) and configuration unknown. No resights.	L10	L10	0.75	-	Yes
07-Jul-17	CCS0919	22nm N of Provincetown, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with line and buoy trailing from unknown attachment point(s). Resights confirm gear free and healthy.	L10	L10	0	Gear Free	-
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>							<b># events/sums:</b>	<b>27</b>	<b>9.75</b>	<b>15</b>	<b>17</b>	
07-Apr-14	-	8.3 nm SE of Marblehead, MA	Entangled	USA	Gear identified	Pot/trap	Acoustic research team reported animal with buoy 20-30 ft off left side. Unclear if anchored. US Coast Guard did not relocate. Resighted by acoustic team on 11Apr2014. Animal anchored with line through mouth, twisting beneath the lower jaw, creating a bridle that was abrading ventral pleats and corners of mouth. Disentangled.	L2	n/a	0	Rescue	Yes
15-Jun-14	-	Pettes Cove, Grand Manan, NB	Entrapped	Canada	Gear identified	Weir	Whale entrapped in weir. Fisher used a mammal seine to drag whale out the following day. Animal had scuffed chin and dorsal.	L10	n/a	0	Rescue	-
10-Jul-14	-	10.2 nm SE of Southport, ME	Entangled	Unknown First seen USA	-	Unknown	Free-swimming, trailing 2 buoys. Attachment point(s) and configuration unknown.	L10	L10	0.75	-	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>												
12-Jul-14	-	9.8 nm S of Southampton, NY	Entangled	Unknown First seen USA	-	Debris	Free-swimming with yellow plastic strapping cutting into top and sides of rostrum. No trailing gear. Previously reported as gear unknown.	L2	L2	1	-	Yes
21-Jul-14	-	5 nm NW of Chéticamp, Cape Breton, NS	Entangled	Canada	Gear identified	Pot/trap	Anchored vertically in water column by single trap. Line at mouth and/or flippers on both sides extending down to multiple constricting peduncle wraps. Disentangled. Resighted the next day in good condition.	L2	n/a	0	Rescue	-
26-Mar-15	-	2.0 nm off Cape Canaveral, FL	Entangled	Unknown First seen USA	-	Unknown	Evidence of constricting rostrum wrap, but unable to determine if gear still present. Emaciated.	L2	L10	1	Health decline	Yes
14-Jun-15	-	21.8 nm SE of Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with acorn buoy trailing 20-30 ft. Attachment point(s) and configuration unknown.	L10	L10	0.75	-	Yes
23-Jun-15	-	4.0 nm SE of Ingonish, NS	Entangled	Canada	Gear identified	Pot/trap	Entangled in traps and buoys. Partially disentangled by fisher. Original and final configuration unknown.	L10	L10	0.75	-	-
03-Jul-15	-	32.6 nm SE of Point Judith, RI	Entangled	USA	Gear identified	Pot/trap	Anchored by a bridle of gear around the lower jaw. Disentangled.	L2	n/a	0	Rescue	Yes
07-Jul-15	-	Saint Bride's, NL	Entangled	Canada	Gear identified	Cod trap	Entangled in unknown configuration, but self-released from weir.	L10	L10	0	Gear free	-
20-Jul-15	-	0.5 nm SE of Bliss Island, NB	Entangled	Canada	Fresh injury or known location	Unknown	Anchored by bridle of gear around the lower jaw. Disentangled.	L2	n/a	0	Rescue	-
31-Oct-15	-	2.2 nm S of Boothbay Harbor, ME	Entangled	USA	Gear identified	Pot/trap	Anchored by line through mouth and body wrap. Disentangled by fisher.	L2	n/a	0	Rescue	Yes
21-Jul-16	-	Digby, NS	Entangled	Unknown First seen Canada	-	Net	Free-swimming with netting deeply embedded in rostrum. Disentangled, but significant health decline. Gear type previously reported as unknown.	L2	L2	1	-	Yes
09-Aug-16	-	4.4 nm S of Matinicus Island, ME	Entangled	USA	Gear identified	Pot/trap	Anchored with line through mouth, crossing over blowholes, and twisting along right side. Disentangled.	L2	n/a	0	Rescue	Yes

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>												
02-Nov-16	-	Bonne Bay, Gros Morne National Park, NL	Entangled	Unknown First seen Canada	-	Unknown	Free-swimming and towing gear. Attachment point(s) and configuration unknown. No resights post 06Nov2016.	L10	L10	0.75	-	Yes
31-May-17	-	Stephenville, NL	Entangled	Canada	Gear identified	Pot/trap	Disentangled from unknown configuration.	L10	n/a	0	Rescue	-
03-Aug-17	-	6.8nm SE of Bar Harbor, ME	Entangled	USA	Gear identified	Pot/trap	Anchored in gear with line through mouth with at least 2 loose peduncle wraps. Partially disentangled. Left with open bridle and line trailing aft of fluke - likely to shed.	L2	L3	0	-	Yes
11-Aug-17	-	3.8nm SE of York, ME	Entangled	USA	Fresh injury or known location	Unknown	Anchored in gear. Partially disentangled by recreational boater. Final configuration - free-swimming with line and buoys from unknown attachment point(s).	L2	L10	0.75	-	Yes
26-Sep-17	-	12.6nm E of Richibucto, NB	Entangled	Canada	Fresh injury or known location	Unknown	Appeared anchored by tail. Animal dove and not resighted. Unable to confirm shed gear.	L2	L10	0.75	-	-
09-Oct-17	-	5.9nm E of Portsmouth, NH	Entangled	USA	Fresh injury or known location	Ghost Pot/trap	Anchored in 2 sets of gear. Disentangled. Primary gear = ghost pot/trap, Secondary gear = US pot/trap.	L2	n/a	0	Rescue	Yes
22-Jun-18	-	4.5 nm N of Grand Manan, NB	Entangled	Unknown First seen Canada	-	Unknown	Full configuration unclear - line across back, one buoy under left pectoral and another trailing 30-40ft aft. Reported as anchored but unable to confirm. Response team was not able to relocate.	L10	L10	0.75	-	Yes
23-Jun-18	-	Back Bay, NB	Entrapped	Canada	Gear identified	Weir	Released from weir entrapment.	L10	n/a	0	Released	-
04-Aug-18	-	1.5 nm E of Peaks Island, ME	Entangled	USA	Gear identified	Pot/trap	Anchored by flukes. Disentangled.	L2	n/a	0	Rescue	Yes
06-Aug-18	-	Fish Cove Point, NL	Entangled	Canada	Gear identified	Net	Free-swimming towing net with float attached. Member of public cut off float. Original and final configuration unknown.	L10	L10	0.75	-	-

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Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>	
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>													
29-Aug-18	-	7.5 nm SE of Chatham, MA	Entangled	Unknown	First seen USA	-	Unknown	Free-swimming with buoy near flukes, full configuration unknown.	L10	L10	0.75	-	Yes
29-Aug-18	-	1.0 nm W of Gloucester, MA	Entangled	USA	Fresh injury or known location	-	Unknown	Disentangled from anchoring gear.	L2	n/a	0	Rescue	Yes
28-Sep-18	-	Bradford Cove, Grand Manan, NB	Entrapped	Canada	Gear identified	Weir	Released from weir entrapment.	L10	n/a	0	Released	-	-
<b>Nova Scotian sei whale (<i>Balaenoptera borealis</i>)</b>									<b>#event/sums</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>
11-May-16	-	29.6 nm E of Portsmouth, NH	Entangled	Unknown	First seen USA	-	Debris	Free-swimming with plastic strapping around tip of rostrum. Does not appear constricting. Animal is in apparent good health and exhibiting normal behavior. Previously reported as gear unknown.	L3	L3	0	-	-
11-May-17	-	Cape Lookout Bight, NC	Entangled	Unknown	First seen USA	-	Unknown	Free-swimming with large mass of heavily fouled gear containing lines and buoys over back and along left side. Full configuration unknown. Emaciated.	L10	L10	1	Health decline	Yes
<b>Unidentified Whale</b>									<b># events/sums:</b>	<b>9</b>	<b>3.8</b>	<b>0</b>	<b>4</b>
03-May-15	-	1.3 nm E of Ellsville, MA	Vessel strike	USA	Fresh injury or known location	-	-	33 ft vessel at 15 kts struck whale when it surfaced in front of him. Remained on site but did not see blood in the water or resight the animal. Sustained damage to propeller. Boater identified as right whale, but no photos or genetic samples on propeller to confirm. Likely is the same whale reported with new lacerations on 06May2015 (see right whale 3999 above), but unable to confirm.	L6b	L6b	0.2	-	-
06-Jul-15	-	Middle Head, Ingonish, NS	Entangled	Unknown	First seen Canada	-	Unknown	Trailing 2 ft of gear. Attachment point(s) and configuration unknown.	L10	L10	0.75	-	Yes
09-Jul-15	-	17.8 nm ESE of Shippagan, NB	Entangled	Unknown	First seen Canada	-	Unknown	Trailing buoy and 50 ft of line. Attachment point(s) forward on the body - fluke was free of gear - configuration unknown.	L10	L10	0.75	-	Yes

**Appendix A. Details of reported baleen whale injury events along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. Assignment of Serious Injury (SI) criteria, SI values, and List of Fisheries (LOF) inclusion follow the guidance established by NMFS Instruction 02-038-01. Criteria categories described in Table 1.**

Date	Individual	Location	Cause of Injury	Country of Origin	Country ID method	Gear Type	Description	Initial SI criteria	Final SI criteria	SI value	SI value changes	LOF <sup>a</sup>
<b>Unidentified Whale</b>												
14-Feb-16	-	15 mi off Palm Coast, FL	Vessel strike	USA	Fresh injury or known location	-	27 ft sailboat at 5.5 kts at night made contact on port side of vessel, turning vessel 45-60 degrees to starboard. Heard loud exhalation prior to impact, but did not see animal.	L6c	L6c	0	-	-
06-May-16	-	23.1 nm E of Monomoy, MA	Vessel strike	USA	Fresh injury or known location	-	60 ft racing sailboat at 20 kts reported striking a whale. Starboard rudder destroyed. Description indicates probable humpback, but unable to confirm.	L6b	L6b	0.2	-	-
09-May-16	-	0.3 nm NE of Truro, MA	Entangled	Unknown First seen USA	-	Unknown	Free-swimming with small orange buoy aft of flukes. Insufficient detail provided to determine species or configuration.	L10	L10	0.75	-	Yes
02-Oct-17	-	7.9 nm E of Atlantic City, NJ	Entangled	Unknown First seen USA	-	Unknown	Multiple lines wrapping peduncle and trailing 2 buoys at unknown distance. Full configuration unknown. Likely a minke, but unable to confirm species.	L10	L10	0.75	-	Yes
20-Jul-18	-	Raritan Bay, NJ	Vessel strike	USA	Fresh injury or known location	-	20 ft vessel traveling over 10 kts drove over whale which lifted vessel in the air. No contact with the propeller. Whale resurfaced, no mention made of blood, likely humpback, but unable to confirm species.	L6b	L6b	0.2	-	-
03-Sep-18	-	Moriches, NY	Vessel strike	USA	Fresh injury or known location	-	36 ft vessel traveling at 30 kts self-reported striking a whale. Heard impact with port bow, sustained vessel damage. No blood in water witnessed, animal not resighted.	L6b	L6b	0.2	-	-

**Appendix B. Confirmed human-caused mortality records of baleen whale stocks along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. COD = Cause of Death. LOF = Consider for inclusion in List of Fisheries.**

Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF	
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>									
04-Sep-14	-	115 nm SE of Saint-Pierre and Miquelon, NL	Entangled	Unknown	First seen Canada	-	Unknown	Carcass with constricting line around rostrum and body. No necropsy conducted, but evidence of extensive, constricting entanglement supports entanglement as COD.	Yes
27-Sep-14	-	36 nm S of Nantucket, MA	Entangled	USA	Fresh mortality or known location	-	Unknown	Fresh carcass with multiple lines wrapping around head, pectoral, and peduncle. Appeared to be anchored. No necropsy conducted, but extensive, constricting entanglement supports entanglement as COD.	Yes
03-May-16	4681	Morris Island, MA	Vessel strike	USA	Fresh mortality or known location	-	-	Fresh carcass with 9 deep ventral lacerations. Multiple shorn and/or fractured vertebral and skull bones. Destablized thorax. Edema, blood clots, and hemorrhage associated with injuries. Proximate COD - sharp trauma. Ultimate COD - exsanguination.	-
31-Aug-16	4320	Sable Island, NS	Entangled	Canada	Gear identified	Pot/trap	-	Decomposed carcass with multiple constricting wraps on pectoral with associated bone damage consistent with chronic entanglement.	-
23-Sep-16	3694	6.5 nm SE of Seguin Island, ME	Entangled	Canada	Gear identified	Pot/trap	-	Fresh, floating carcass with extensive, constricting entanglement. Thin blubber layer and other findings consistent with prolonged stress caused by chronic entanglement. Gear previously reported as unknown.	Yes
13-Apr-17	4694	1.5 nm NW of Dennis, MA	Vessel strike	USA	Fresh mortality or known location	-	-	Deep hemorrhage and muscle tearing consistent with blunt trauma.	-
19-Jun-17	1402/ Glacier	28.8 nm NE of Tignish, PEI	Vessel strike	Canada	Fresh mortality or known location	-	-	Acute internal hemorrhage consistent with blunt trauma.	-
21-Jun-17	3603/ Starboard	50.1 nm SE of Percé, QC	Entangled	Canada	Gear identified	Pot/trap	-	Fresh carcass anchored in at least 2 sets of gear with extensive, constricting wraps.	-
23-Jun-17	1207	46.1 nm NE of Tignish, PEI	Vessel strike	Canada	Fresh mortality or known location	-	-	Acute internal hemorrhage consistent with blunt trauma.	-
06-Jul-17	-	30.1 nm W of Îles de la Madeleine, QC	Vessel strike	Canada	Fresh mortality or known location	-	-	Fractured skull with associated hemorrhaging. Laceration of oral rete with subsequent exsanguination. Injuries consistent with blunt trauma.	-
19-Jul-17	2140/ Peanut	22.9 nm E of Miscou, NB	Vessel strike	Canada	Fresh mortality or known location	-	-	Acute internal hemorrhage consistent with blunt trauma.	-
06-Aug-17	-	Martha's Vineyard, MA	Entangled	Unknown	First seen USA	-	Unknown	No gear present. Evidence of constricting gear with associated hemorrhaging.	Yes

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Western North Atlantic right whale (<i>Eubalaena glacialis</i>)</b>								
15-Sep-17	4504	35.7 nm SE of Percé, QC	Entangled	Canada	Gear identified	Pot/trap	Anchored in gear with extensive constricting wraps with associated hemorrhaging.	-
23-Oct-17	-	Nashawena Island, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present. Evidence of extensive, constricting entanglement with associated hemorrhaging.	Yes
22-Jan-18	3893	55 nm E of Virginia Beach, VA	Entangled	Canada	Gear identified	Pot/trap	Extensive, severe constricting entanglement including partial amputation of right pectoral accompanied by severe proliferative bone growth. COD - chronic entanglement.	-
25-Aug-18	-	Martha's Vineyard, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present. Evidence of constricting pectoral wraps with associated hemorrhaging. COD - acute entanglement	Yes
14-Oct-18	3515	134 nm E of Nantucket, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of constricting wraps across ventral surface and at pectorals. COD - acute, severe entanglement.	Yes
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>								
11-Sep-14	Spinnaker	18.2 nm SE of Southwest Harbor, ME	Entangled	Unknown First seen USA	-	Gillnet	Free-swimming with gillnet gear. Found anchored on 12Sep2014. Gillnet panel lodged in mouth and tightly wrapping forward part of body. Panel entangled in pots with 20+ wraps of pot lines around flukes and peduncle. Mostly disentangled - left with short section of gillnet in mouth expected to shed. Animal entangled again (14May2015 - anchored and disentangled). Carcass found 11Jun2015. Necropsy revealed gillnet from 2014 entanglement embedded deep into the maxilla and through the vomer. Bone had started to grow around the line. Gillnet is unknown origin. Pot/trap is US gear.	Yes
25-Dec-14	Triomphe	Little Cranberry Island, ME	Entangled	Unknown First seen USA	-	Unknown	Fresh carcass with evidence of extensive constricting entanglement. No gear present. No necropsy, but robust body condition and histopathology results of samples support entanglement as COD.	Yes
03-Feb-15	-	Corolla, NC	Entangled	USA	Fresh mortality or known location	Unknown	Fresh carcass with injuries consistent with constricting gear. No gear present. Full stomach indicating fed recently. COD likely peracute underwater entrapment.	Yes
13-Apr-15	-	15.4 nm SE of Fire Island, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive bruising and hemorrhaging at left gape and pectoral, throat, and right and left lateral thorax.	-

**Appendix B. Confirmed human-caused mortality records of baleen whale stocks along the Gulf of Mexico, US East Coast, and Atlantic Canadian provinces, 2014-2018. COD = Cause of Death. LOF = Consider for inclusion in List of Fisheries.**

Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>								
18-Apr-15	-	Smith Point, NY	Vessel strike	USA	Fresh mortality or known location	-	Multifocal hemorrhage and edema in right lateral abdomen.	-
29-Jun-15	-	Fire Island, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive fracturing of cranial bones with associated bruising. Additional extensive bruising along dorsal and right lateral body.	-
17-Oct-15	-	Lloyd Harbor, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive bruising and edema around right cranial and pectoral area.	-
25-Apr-16	-	Marshfield, MA	Vessel strike	USA	Fresh mortality or known location	-	Bruising deep to muscle and fascia by right pectoral and mandible at the base of the skull. Limited necropsy, but depth and area of bruising consistent with blunt trauma from vessel strike.	-
25-Apr-16	-	Napeague Bay, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive bruising to ventral thoracic region along with fractured ribs.	-
15-Jun-16	-	20.9 nm E of Fenwick Island, DE	Vessel strike	USA	Fresh mortality or known location	-	Large area of hemorrhaging around neck and head. Organs displaced forward in body cavity. Full stomach.	-
24-Jun-16	-	0.5 nm E off Shinnecock Inlet, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive bruising to connective tissue and muscles of the left side, back, and right peduncle.	-
26-Jun-16	Snowplow	15 nm NE of Rockport, MA	Vessel strike	USA	Fresh mortality or known location	-	Limited necropsy, but significant evidence of blunt trauma to left head and pectoral consistent with vessel strike.	-
10-Sep-16	-	Jobs Neck Cove, Martha's Vineyard, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of constricting entanglement with associated reactive tissue at fluke insertions. State of decomposition at time of exam precluded COD determination, but injuries and thin blubber layer are consistent with chronic entanglement.	Yes
16-Oct-16	GOM-1626	2.1 nm E of Ipswich, MA	Entangled	USA	Gear identified	Pot/trap	No necropsy, but extensive entanglement. Line through mouth with constricting wraps on both flippers, body, and peduncle. Entanglement as COD most parsimonious. Confirmed as same individual released from weir on 27Sep2016 (see Appendix A).	Yes
16-Dec-16	HDRVA078	2 mi E of Dam Neck, VA	Entangled	USA	Fresh mortality or known location	Unknown	No gear present, but evidence of extensive constricting entanglement. Fresh carcass with digestive system full of fish. COD dry drowning by entanglement.	Yes

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<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>								
02-Feb-17	-	Hampton Roads Bridge-Tunnel, Chesapeake Bay, VA	Vessel strike	USA	Fresh mortality or known location	-	Four deep lacerations that penetrated body cavity. Robust condition with full stomach. COD - exsanguination and asphyxia from sharp trauma.	-
05-Feb-17	-	Chesapeake Bay Bridge-Tunnel, Chesapeake Bay, VA	Vessel strike	USA	Fresh mortality or known location	-	Extensive skeletal fracturing with associated hemorrhaging consistent with blunt trauma.	-
11-Feb-17	-	Fort Story, VA	Vessel strike	USA	Fresh mortality or known location	-	Three deep lacerations that penetrated body cavity. Robust condition with full stomach. COD - exsanguination from sharp trauma.	-
03-Apr-17	-	Rockaway, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive hemorrhage and edema along back and side consistent with blunt trauma.	-
04-May-17	-	North Shores, Rehoboth Beach, DE	Vessel strike	USA	Fresh mortality or known location	-	Evidence of blunt trauma with associated hemorrhaging. Deep lacerations to ventral peduncle and side, possibly post-mortem.	-
15-Jun-17	-	Jamestown, RI	Vessel strike	USA	Fresh mortality or known location	-	Muscle contusions and associated cranial fractures consistent with blunt trauma.	-
18-Jun-17	GOM-1625	Monomoy, Chatham, MA	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of constricting entanglement with associated hemorrhaging at insertion of pectorals and fluke. Injuries combined with poor body condition makes entanglement the most parsimonious COD.	Yes
01-Aug-17	2017 Calf of Cajun	21.9nm SE of Gloucester, MA	Entangled	Unknown First seen USA	-	Gillnet	Dependent calf with evidence of extensive constricting entanglement. Gillnet exiting right mouth. Evidence of health decline. Carcass documented in Feb 2018, unable to confirm if gear still present. No necropsy. Proximate COD - entanglement. Ultimate COD - unknown.	Yes
01-Oct-17	-	9nm S of Narragansett, RI	Vessel strike	Unknown First seen USA	-	-	Hemorrhaging along dorsal and left side consistent with blunt trauma.	-
26-Dec-17	-	East Atlantic Beach, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive bruising and edema along both sides of body consistent with blunt trauma.	-
28-Jan-18	-	Peters Point, FL	Vessel strike	USA	Fresh mortality or known location	-	Hemorrhage with associated skeletal fractures consistent with blunt force trauma.	-

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Gulf of Maine humpback whale (<i>Megaptera novaeangliae</i>)</b>								
12-Feb-18	-	Breezy Point, NY	Vessel strike	USA	Fresh mortality or known location	-	Hemorrhage and edema along back and sides consistent with blunt force trauma.	-
05-May-18	-	Raritan Bay, NJ	Vessel strike	USA	Fresh mortality or known location	-	Extensive edema in musculature along sides and ventral surface consistent with blunt force trauma.	-
18-May-18	-	Long Beach, NY	Vessel strike	USA	Fresh mortality or known location	-	Extensive hemorrhage and edema along dorsal surface consistent with blunt force trauma.	-
27-May-18	-	Fire Island, NY	Vessel strike	Unknown First seen USA	-	-	Extensive hemorrhage and edema along dorsal surface consistent with blunt force trauma.	-
01-Jun-18	-	Breezy Point, NY	Vessel strike	Unknown First seen USA	-	-	Extensive hemorrhage and edema along dorsal, side, and ventral surfaces consistent with blunt force trauma.	-
27-Jul-18	-	Napeague, NY	Entangled	Unknown First seen USA	-	Unknown	Multiple constricting wraps at fluke insertion, deeply embedded and partially severing flukes.	Yes
29-Aug-18	2016 Calf of Venom	1.5 nm E of Hampton Beach, NH	Entangled	USA	Gear identified	Net	Free-swimming with netting, line, and floats around peduncle - configuration unclear. Disentangled by recreational boaters. Confirmed gear free on 03Sep, behaving abnormally. Carcass found on 07Sep, but no gear present. No necropsy conducted but primary COD from entanglement most parsimonious because of abnormal behavior that is indicative of health decline. Ultimate COD unknown.	Yes
07-Sep-18	Peajack	off Brier Island, NS	Entangled	Unknown First seen Canada	-	Pot/trap	Anchored carcass with line through mouth leading to multiple constricting. No necropsy, but extensive constricting gear makes COD from entanglement most parsimonious.	Yes
15-Dec-18	2016 Calf of Zeppelin	Cape Helopen, Lewes, DE	Vessel strike	USA	Fresh mortality or known location	-	Skeletal fracturing with associated hemorrhaging. COD - blunt trauma from vessel strike.	-

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Western North Atlantic fin whale (<i>Balaenoptera physalus</i>)</b>								
12-Apr-14	-	Port Elizabeth, NJ	Vessel strike	USA	Fresh mortality or known location		Fresh carcass on bow of 965 ft vessel. Speed at strike unknown. Large external abrasions with associated hemorrhage and skeletal fractures along right side.	-
13-May-14	-	10 nm off Rocky Harbour, NL	Entangled	Canada	Gear identified	Pot/trap	Fisher found fresh carcass when hauling gear. Entangled 90m at depth, close to pots. Line through mouth and around peduncle, hogtying the whale.	-
05-Oct-14	-	35 nm E of Manasquan, NJ	Vessel strike	USA	Fresh mortality or known location	-	Large areas of hemorrhage along dorsal, ventral, and right lateral surfaces consistent with blunt force trauma.	-
30-May-17	-	Port Newark, NJ	Vessel strike	USA	Fresh mortality or known location	-	Fresh carcass on bow of 656 ft vessel. Speed at strike unknown.	-
25-Aug-17	-	38nm NE of Miscou Island, NB	Entangled	Canada	Gear identified	Pot/trap	Fisher hauled carcass up from depth - configuration unknown, but partway between buoy and trap. Unlikely to have drifted postmortem in midwater column. Entanglement is the most parsimonious COD.	-
22-Jun-18	-	16.5 nm E of Gaspé, QC	Entangled	Canada	Fresh mortality or known location	Unknown	No gear present. Fresh carcass with evidence of constricting entanglement across ventral pleats and peduncle with raw injuries to fluke. Evidence of associated bruising. No necropsy, but COD from entanglement is most parsimonious.	-
14-Oct-18	Ladders	3.5 nm S of Wood End, Provincetown, MA	Vessel strike	USA	Fresh mortality or known location	-	Fractured mandibles and rostrum with associated hemorrhaging. COD - blunt trauma from vessel strike.	-
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>								
09-Jun-14	-	off Truro, MA	Entangled	USA	Gear identified	Pot/trap	Fresh carcass anchored, hogtied in gear. COD - peracute underwater entrapment.	Yes
02-Jul-14	-	Northumberland Strait, NB	Entangled	Canada	Fresh mortality or known location	Unknown	Carcass with constricting gear around lower jaw. Large open injury at attachment point on the left side.	-
17-Jul-14	-	South Addison, ME	Entangled	Unknown First seen USA	-	Unknown	Fresh carcass with line impression across ventral surface and evidence of constricting gear around peduncle and fluke insertion. Bruising evident at fluke injuries. No gear present.	Yes
29-Jul-14	-	4.5 nm S of Herring Cove, NS	Vessel strike	Canada	Fresh mortality or known location	-	Live animal with tongue completely ballooned out, forcing its jaws 90 degrees apart. Found dead at same location the next day. Carcass recovered with 2 traps and constricting line around the peduncle. Necropsy found indication of blunt trauma to right jaw. Suspect animal became anchored in gear and then was struck by a vessel. Proximate COD - entanglement. Ultimate COD - Vessel strike. Previously reported as an entanglement serious injury but counted as a vessel strike mortality.	-

**Appendix B. Confirmed human-caused mortality records of baleen whale stocks along the Gulf of Mexico, US East Coast, and Atlantic Canadian Provinces, 2014-2018. COD = Cause of Death. LOF = Consider for inclusion in List of Fisheries.**

Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>								
24-Dec-14	-	Dam Neck, VA	Vessel Strike	USA	Fresh mortality or known location	-	Fresh carcass with broken ribs and fractured vertebrae with extensive hemorrhage and edema.	-
16-Apr-15	-	Locke's Island, Shelburne, NS	Entangled	Canada	Fresh mortality or known location	Unknown	Fresh carcass with evidence of constricting wraps. No gear present. Robust, pregnant, fish in stomach and intestines. No other abnormalities noted.	-
09-May-15	-	Duck, NC	Entangled	Unknown First seen USA	-	Unknown	Live stranded and euthanized. Embedded gear cutting into bone of mandible. Emaciated. Proximate COD - entanglement. Ultimate COD - euthanasia.	Yes
06-Jun-15	-	Coney Island, NY	Vessel strike	USA	Fresh mortality or known location	-	Fresh carcass with deep lacerations to throat area and head missing. Large area of bruising on dorsal surface.	-
07-Jul-15	-	20.5 nm NW of Funk Island, NL	Entangled	Canada	Gear identified	Pot/trap	Found at 340m depth between 2 pots. Gear through mouth and wrapped around peduncle.	-
18-Aug-15	-	Roseville, PEI	Entangled	Canada	Fresh mortality or known location	Unknown	Evidence of constricting body, peduncle, and fluke wraps. No gear present. No necropsy but robust body condition supports entanglement as COD.	-
01-Sep-15	-	Gloucester, MA	Entangled	USA	Fresh mortality or known location	Unknown	Evidence of extensive, constricting gear with associated hemorrhaging. No gear present.	Yes
21-Sep-15	-	Burton, PEI	Entangled	Canada	Fresh mortality or known location	Unknown	Evidence of constricting body wraps. No gear present. No necropsy but experts state peracute underwater entrapment most parsimonious.	-
06-Dec-15	-	13 nm S of Port Joli, NS	Entangled	Canada	Gear identified	Pot/trap	Live animal anchored in gear. Carcass recovered 4 days later.	-
03-May-16	-	Biddeford, ME	Entangled	USA	Gear identified	Pot/trap	Line through mouth with evidence of constriction across ventral pleats and at peduncle. Hemorrhaging associated with these lesions.	Yes
15-Aug-16	-	2.0 nm SE of Seguin Island, ME	Entangled	USA	Fresh mortality or known location	Unknown	Line through mouth leading to weighted/anchored gear.	Yes
30-Aug-16	-	3.1 nm SW of Matinicus Island, ME	Entangled	USA	Gear identified	Pot/trap	Fresh carcass anchored in gear with evidence of constricting wraps at peduncle and fluke insertions.	Yes

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>								
24-Apr-17	-	Verrazano-Narrows Bridge, Staten Island, NY	Vessel strike	USA	Fresh mortality or known location	-	Evidence of bruising on dorsal and right scapular region. Histopathology results support blunt trauma from vessel strike as most parsimonious.	-
06-Jul-17	-	Manomet Point, MA	Entangled	USA	Gear identified	Pot/trap	Witnessed becoming anchored and drowning in gear.	Yes
22-Jul-17	-	Piscataqua River NH / ME	Entangled	USA	Fresh mortality or known location	Unknown	No gear present. Limited necropsy. Evidence of multiple constricting wraps with associated hemorrhaging. Robust body condition and full stomach supports entanglement COD as most parsimonious.	Yes
09-Aug-17	-	6.2nm NE of Ellenville, MA	Entangled	USA	Fresh mortality or known location	Unknown	No gear present. Fresh carcass with evidence of extensive constricting entanglement.	Yes
12-Aug-17	-	0.9nm W of West Tremont, ME	Entangled	USA	Fresh mortality or known location	Unknown	Fresh, pregnant carcass in unidentified gear. Evidence of constricting wraps with associated hemorrhaging.	Yes
14-Aug-17	-	1.0nm SE of Narragansett, RI	Entangled	USA	Fresh mortality or known location	Unknown	No gear present. Fresh carcass with evidence of constricting gear with associated hemorrhaging.	Yes
17-Aug-17	-	Rye, NH	Entangled	USA	Fresh mortality or known location	Unknown	No gear present. Limited necropsy. Evidence of extensive constricting entanglement. Robust condition and evidence of recent feeding suggests entanglement as most parsimonious COD.	Yes
28-Aug-17	-	9.6 nm S of Harpswell, ME	Entangled	USA	Gear identified	Pot/trap	Fresh carcass anchored in gear with extensive, constricting wraps.	Yes
30-Aug-17	-	11.1nm NE of Tignish, PEI	Entangled	Canada	Fresh mortality or known location	Unknown	Fresh carcass in gear. Full configuration unclear, but unlikely to have drifted into post-mortem.	-
04-Sep-17	-	Saint Carols, Great Northern Peninsula, NL	Entangled	Canada	Gear identified	Net	Seen alive in gear, found dead the next day.	-
06-Sep-17	-	Newport, RI	Vessel strike	USA	Fresh mortality or known location	-	Extensive hemorrhaging behind the blowhole and along left side. Injuries consistent with blunt trauma.	-
17-Sep-17	-	Henry Island, Inverness, NS	Entangled	Canada	Fresh mortality or known location	Unknown	No necropsy. Fresh carcass with ventrum heavily scavenged indicating entanglement occurred at depth. Gear in mouth and around flukes, unlikely to have drifted into. Evidence of constricting wrap on rostrum.	-

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF <sup>a</sup>
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>								
27-Sep-17	-	5.7nm NE of Richibucto, NB	Entangled	Canada	Fresh mortality or known location	Unknown	No gear present. Fresh carcass with evidence of constricting wraps.	-
10-Oct-17	-	5.0nm E of Rockland, ME	Entangled	USA	Gear identified	Pot/trap	Constricting wrap around lower jaw. Carcass found at depth when hauling gear.	Yes
09-Feb-18	-	Tiverton, Long Island, NS	Entangled	Unknown First seen Canada	-	Unknown	No gear present. Evidence of constricting body, flipper, and peduncle wraps. No necropsy conducted, but COD from entanglement is most parsimonious.	Yes
25-May-18	-	Digby, NS	Vessel strike	Canada	Fresh mortality or known location	-	Fresh carcass in harbor with large area of hemorrhage aft of blowholes. Necropsy did not state COD, but blunt trauma from vessel strike is most parsimonious.	-
11-Jun-18	-	Cape Dauphin, NS	Entangled	Canada	Gear identified	Pot/trap	Fresh, pregnant carcass anchored in gear.	-
19-Jun-18	-	East Point, PEI	Entangled	Canada	Fresh mortality or known location	Unknown	No gear present. Fresh, pregnant carcass with evidence of extensive constricting body and peduncle wraps with associated hemorrhaging.	-
24-Jun-18	-	Wellfleet, MA	Entangled	Unknown First seen USA	-	Gillnet	Evidence of extensive constricting body and mouth wraps with associated hemorrhaging. Deep lacerations at fluke insertion from constricting gear. COD - peracute underwater entrapment.	Yes
07-Jul-18	-	1.6 nm E of New Castle, NH	Entangled	USA	Gear identified	Pot/trap	Anchored in gear with line through mouth and wrapping around body. Associated bruising at right corner of mouth. COD - peracute underwater entrapment.	Yes
22-Jul-18	-	Cape Neddick, ME	Entangled	Unknown First seen USA	-	Unknown	No necropsy, but evidence of constricting wrap at fluke insertion with associated hemorrhaging. Histopathology confirms pre-mortem human-induced trauma.	Yes
28-Jul-18	-	Biddeford, ME	Entangled	Unknown First seen USA	-	Unknown	No gear present, but evidence of constricting gear with associated bruising at mouth, around body and peduncle.	Yes
03-Sep-18	-	Nancy Head, Campobello, NB	Entangled	Canada	Gear identified	Weir, Seine	Live animal entrapped. Failed attempt by fisher to remove animal with seine. Animal became entangled in seine and drowned.	-

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Date	Individual	Location	Cause of Fate	Country of Origin	Country ID Method	Gear Type	Description	LOF <sup>a</sup>
<b>Canadian East Coast minke whale (<i>Balaenoptera acutorostrata</i>)</b>								
16-Sep-18	-	0.7 nm SSE of Rye, NH	Entangled	USA	Gear identified	Pot/trap	Fresh carcass anchored in gear. Constricting body, jaw, peduncle, and fluke wraps with associated hemorrhaging.	Yes
07-Nov-18	-	Tangier Island, VA	Entangled	Unknown First seen USA	-	Net	Constricting gear with associated hemorrhaging partly amputating tip of rostrum. Poor body condition. COD - chronic entanglement.	Yes
25-Dec-18	-	Yarmouth Bar, NS	Entangled	Unknown First seen Canada	-	Unknown	No gear present. Evidence of constricting entanglement on head, ventral pleats, peduncle and flukes. No necropsy, but COD from entanglement is most parsimonious.	Yes
<b>Nova Scotian sei whale (<i>Balaenoptera borealis</i>)</b>								
04-May-14	-	Hudson River, NY	Vessel strike	USA	Fresh mortality or known location	-	Fresh carcass on bow of 1068 ft vessel. Speed at strike unknown. Extensive skeletal fractures with associated hemorrhage along right side.	-
07-May-14	-	Delaware River, Philadelphia, PA	Vessel strike	USA	Fresh mortality or known location	-	Fresh carcass on bow of 401 ft vessel. Speed at strike unknown.	-
14-Aug-14	-	James River, Craney Island, VA	Vessel strike	USA	Fresh mortality or known location	-	Sighted swimming in river. Live stranded on 20Aug2014. Dead on 21Aug2014. Emaciated. Fragment of plastic DVD case within pyloric stomach. Broken bones with associated hemorrhaging. Proximate COD - starvation by ingestion of plastic debris, ultimate COD - blunt trauma from vessel strike.	-
25-Jul-16	-	Newark Bay, NJ	Vessel strike	USA	Fresh mortality or known location	-	Fresh carcass on bow of ship (>65 ft). Speed at strike unknown.	-
12-Mar-18	-	Fanny Keys, FL	Entangled	Unknown First seen USA	-	Unknown	Emaciated with constricting gear around rostrum and associated hemorrhaging. COD - chronic entanglement	Yes

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